Water Conditions Summary

Operations Control, Engineering & Vegetation Management Department

Operations & Maintenance Resource Area

Governing Board Workshop Presentation

February 12, 2003

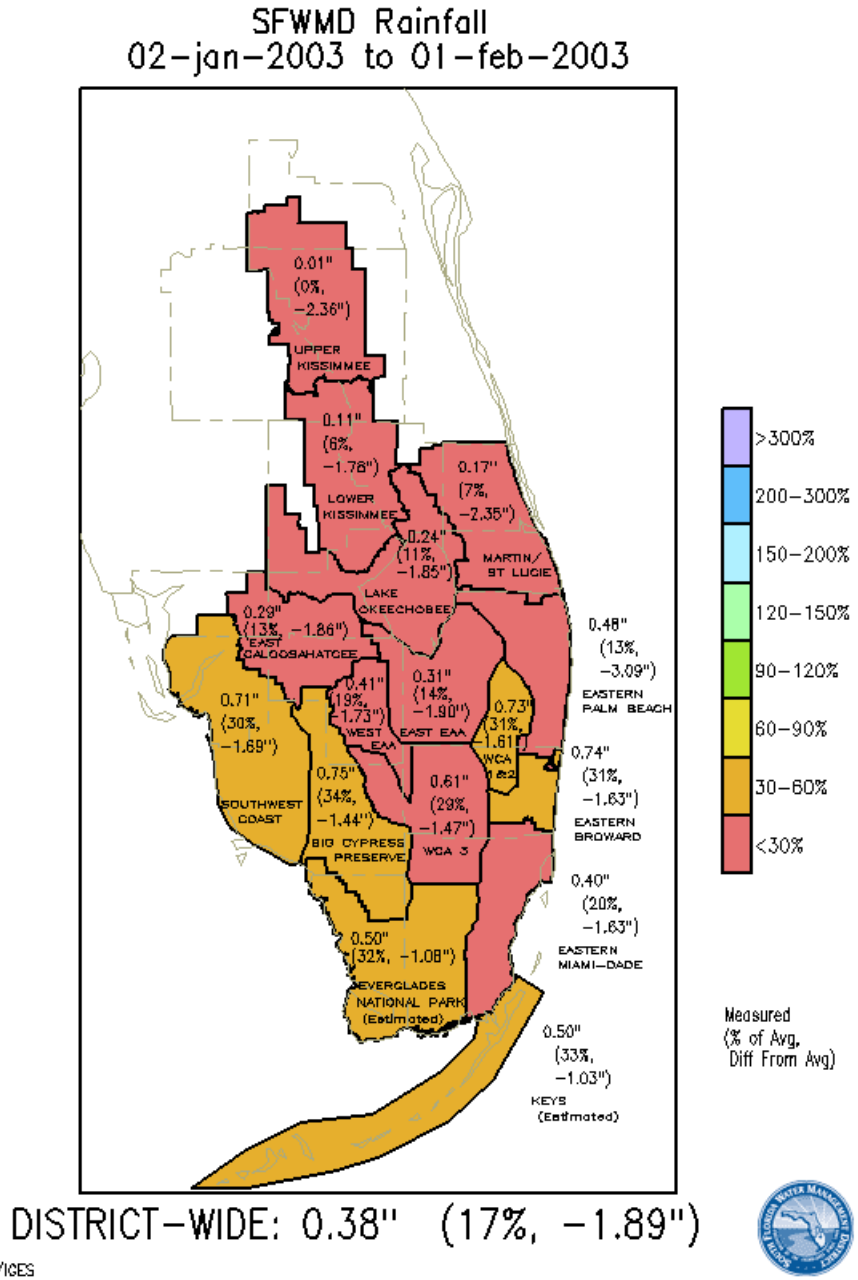
Meteorological Conditions

Governing Board Workshop
Presentation - February 12, 2003

Meteorological Conditions

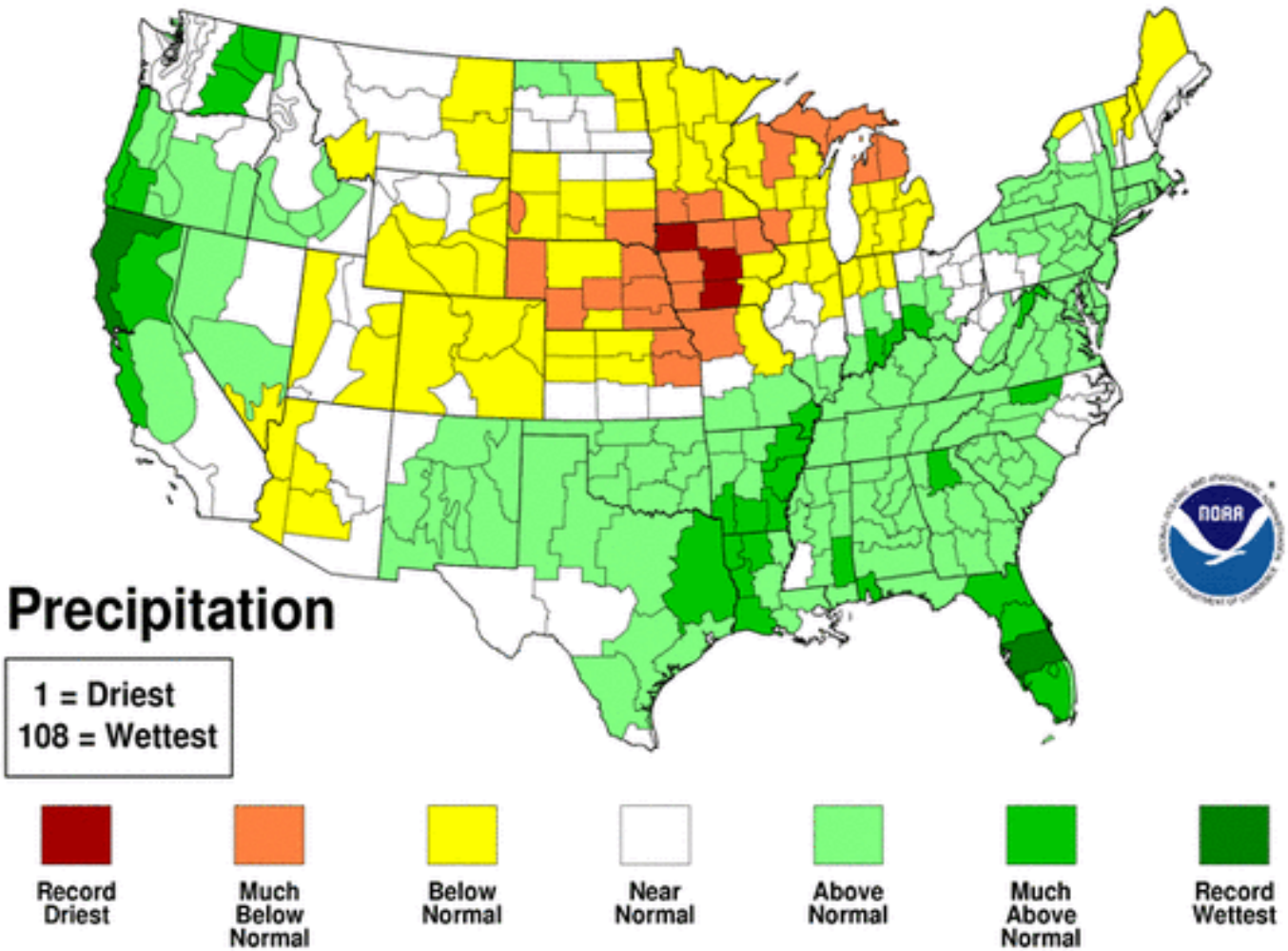
- After a record wet December, rainfall for January was in the "top 5" lowest on record
- January Rainfall : District-wide rainfall was 17% of average
  - Normal Rainfall: 2.27 inches
  - Actual Rainfall: 0.38 inches
  - Est. Pan Evaporation: 3.00 inches
- February Rainfall : To-date District-wide rainfall is 7% of average

- All areas of the District received below average rainfall in January
- Greatest deficit was focused around Lake Okeechobee, the Kissimmee River and the Kissimmee Chain of Lakes



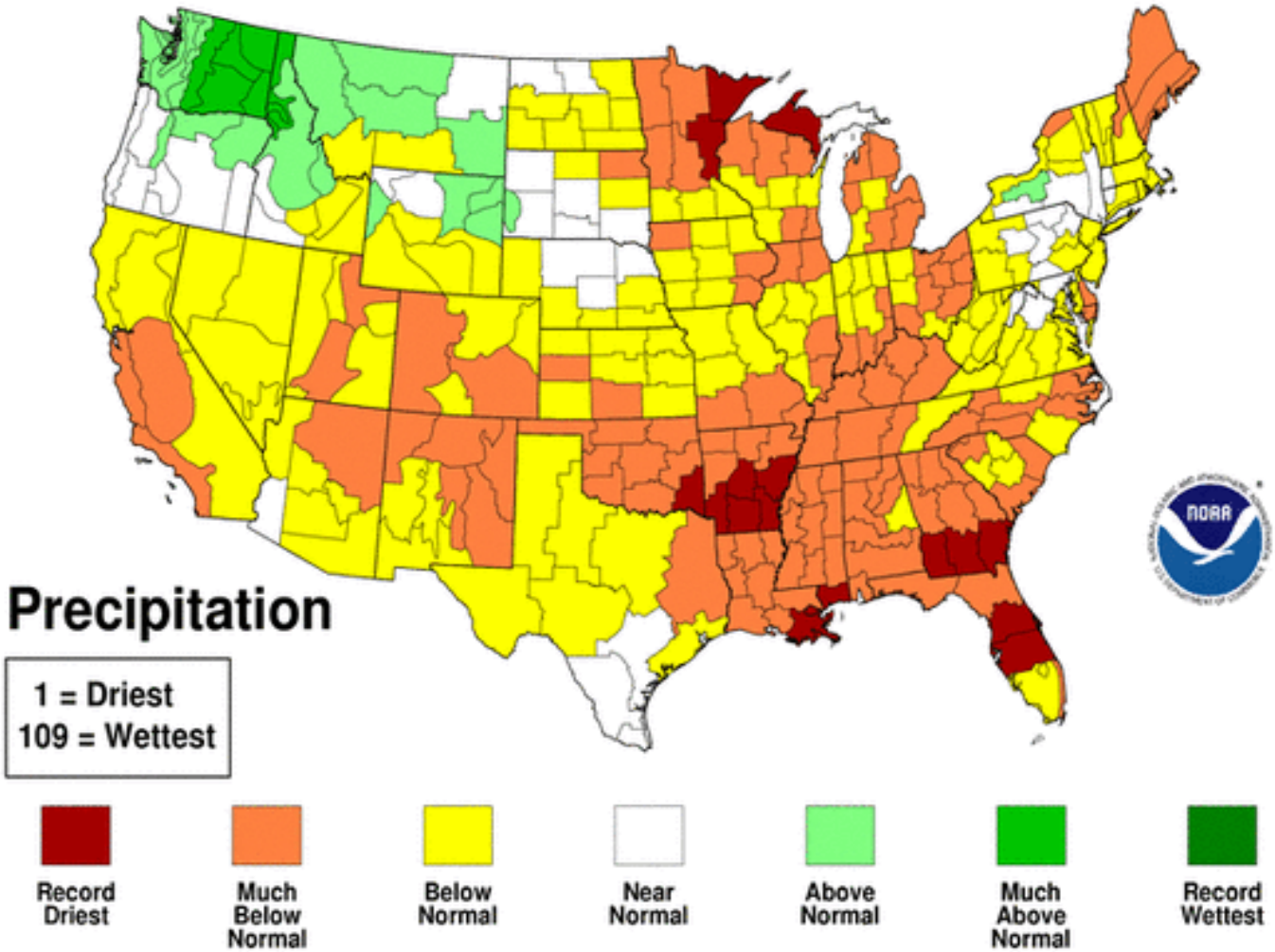
Dec 2002 Divisional Ranks

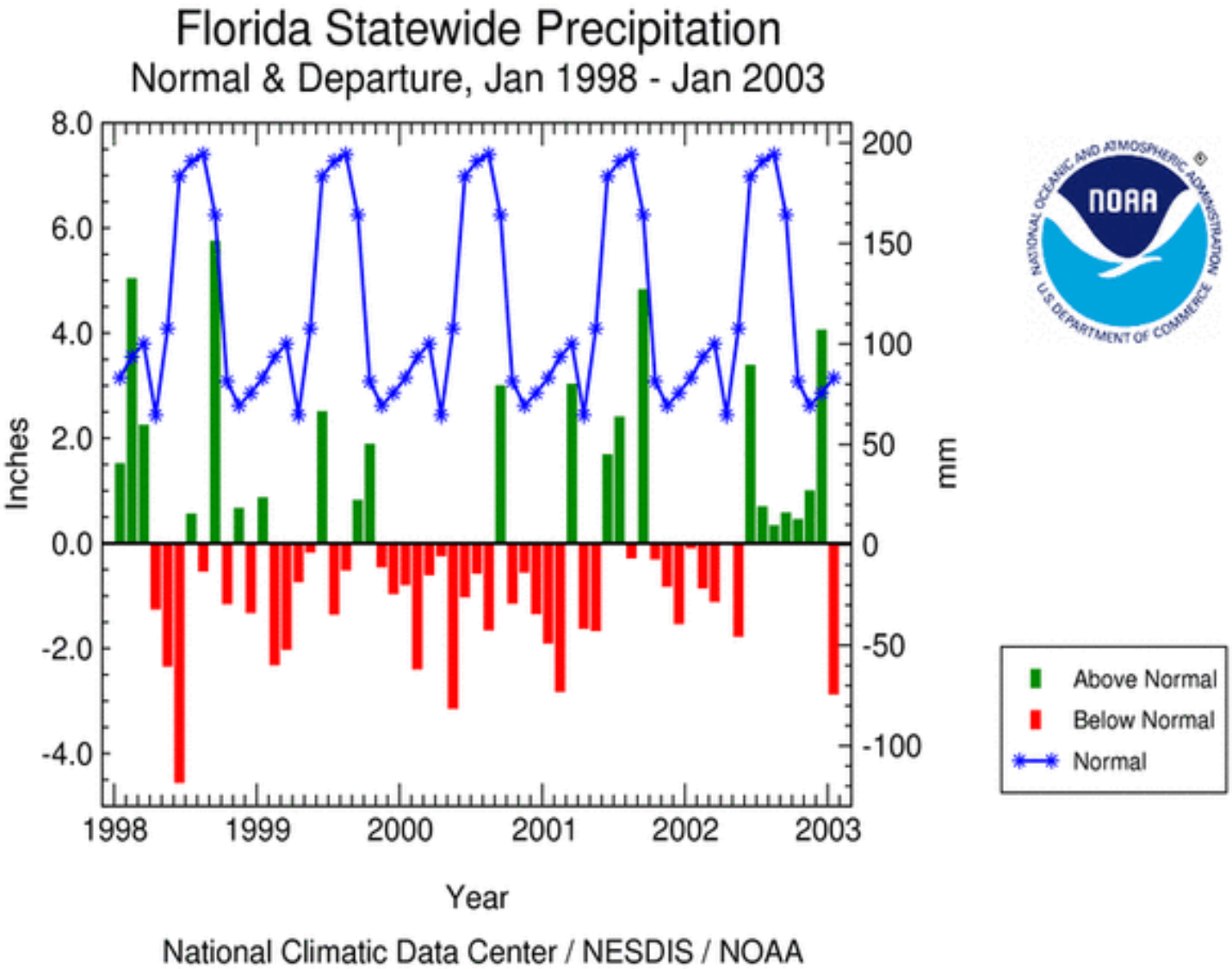
National Climatic Data Center/NESDIS/NOAA



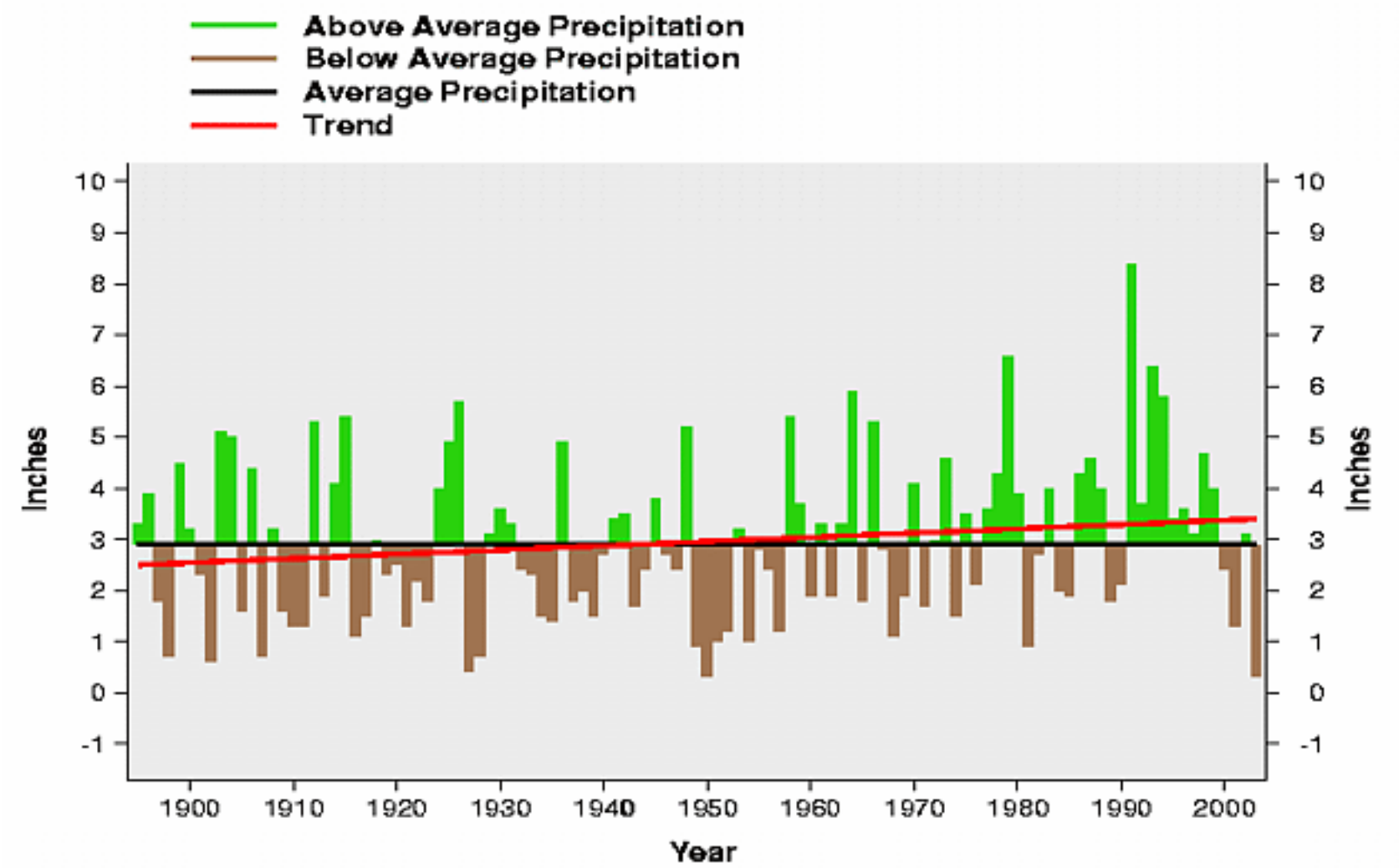
Jan 2003 Divisional Ranks

National Climatic Data Center/NESDIS/NOAA




Florida Statewide Precipitation
Normal & Departure, Jan 1998 - Jan 2003
Inches
mm
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
200
150
100
50
0
-50
-100
1998
1999
2000
2001
2002
2003
Year
National Climatic Data Center / NESDIS / NOAA
Above Normal
Below Normal
Normal

Statewide January Rainfall



Governing Board Workshop
Presentation - February 12, 2003

General Hydrologic Conditions

Governing Board Workshop
Presentation - February 12, 2003

General Hydrologic Conditions

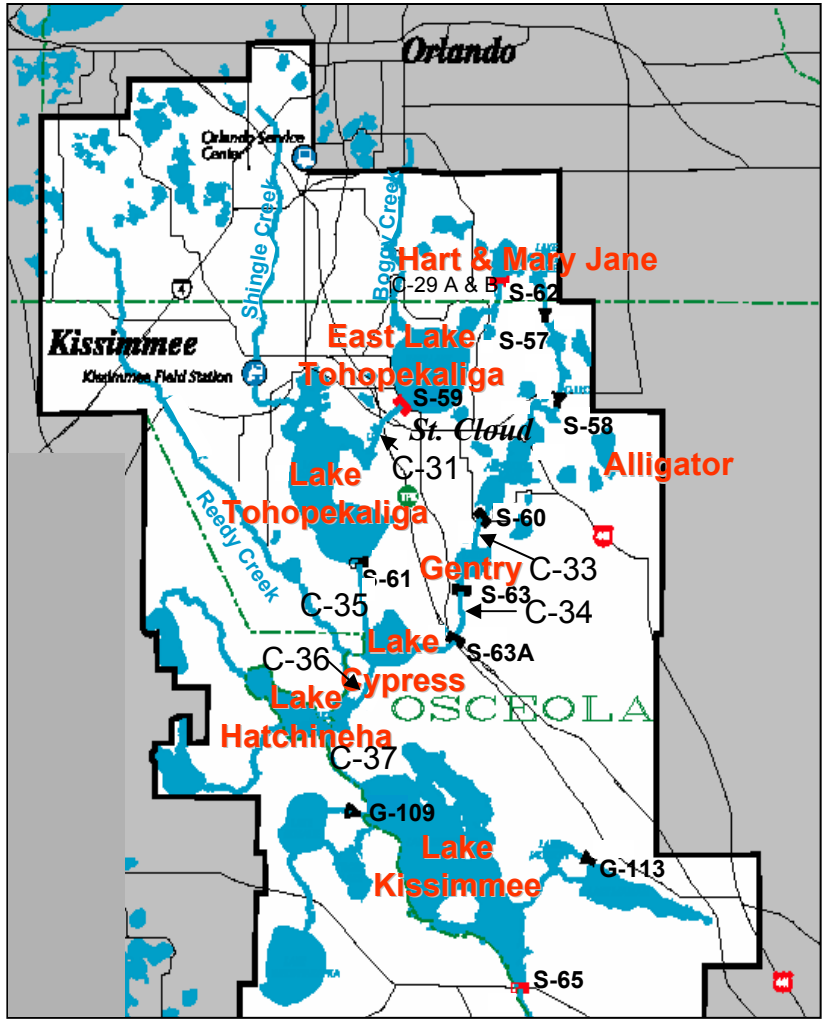
- G **Upper Chain** – Normal to low levels
- G **Kissimmee River** - Normal flows
- Y **Lake Okeechobee** - Above desirable stage
- G **Lake Okeechobee Agriculture**
- Y **Estuaries** – Moderately low salinity- improving

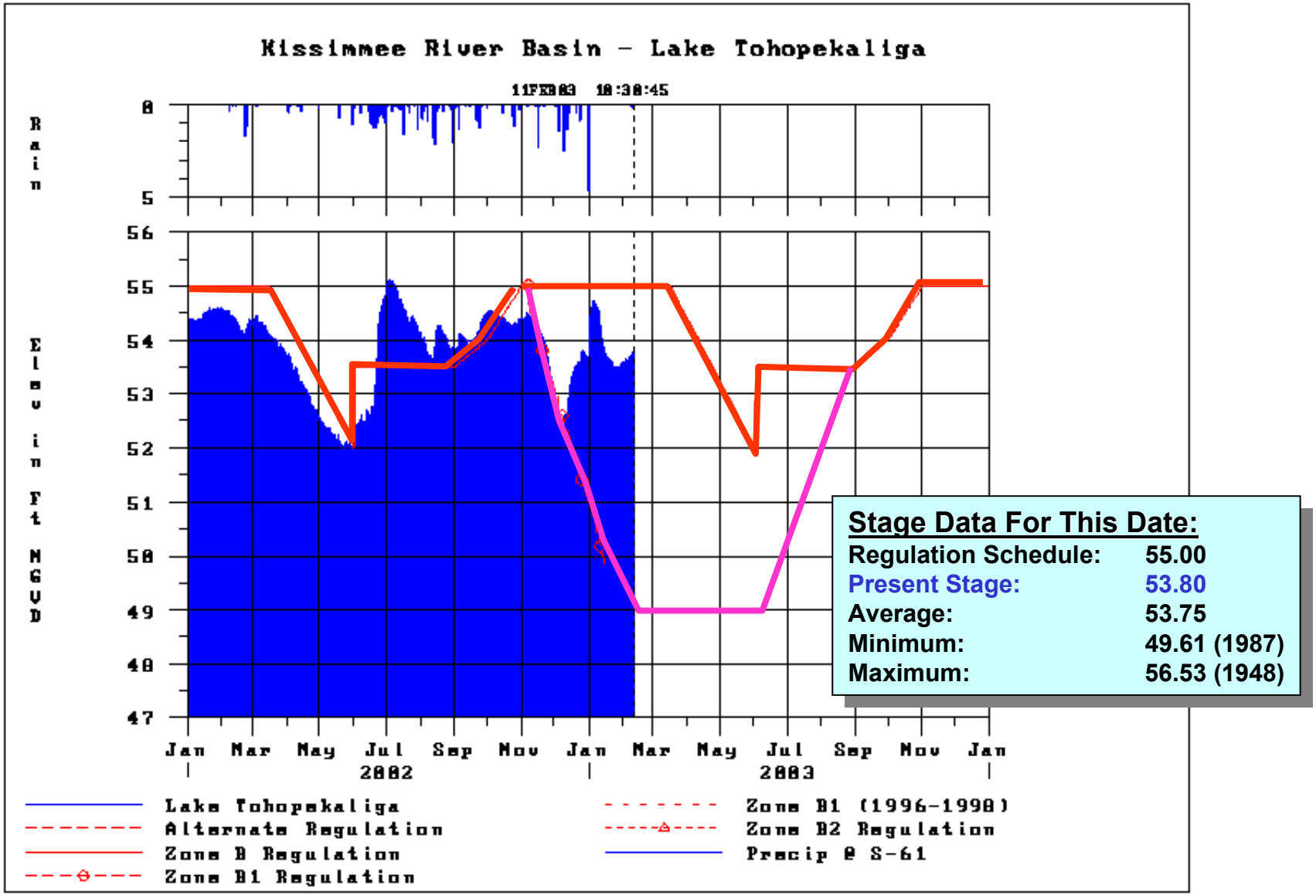
General Hydrologic Conditions

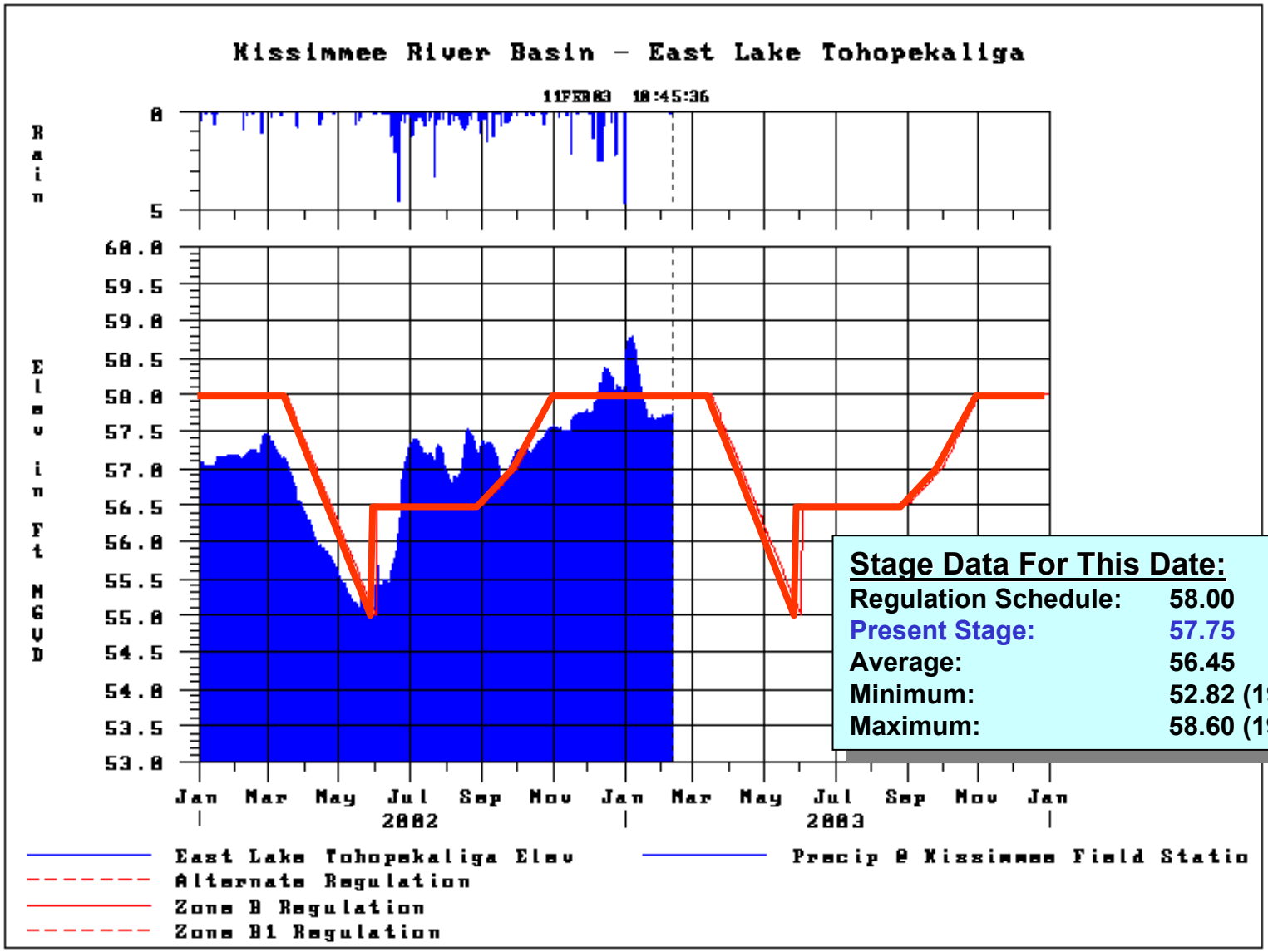
- **Water Conservation Area 1** - Near Sched.
- **Water Conservation Area 2** - Near Sched.
- **Water Conservation Area 3** - Near Sched.
- **ENP** - Normal seasonal conditions
- **Fl. Bay** - Normal seasonal conditions
- **Upper East Coast** - Norm. groundwater
- **Lower East Coast** - Norm. groundwater
- **Lower West Coast** - Norm. groundwater

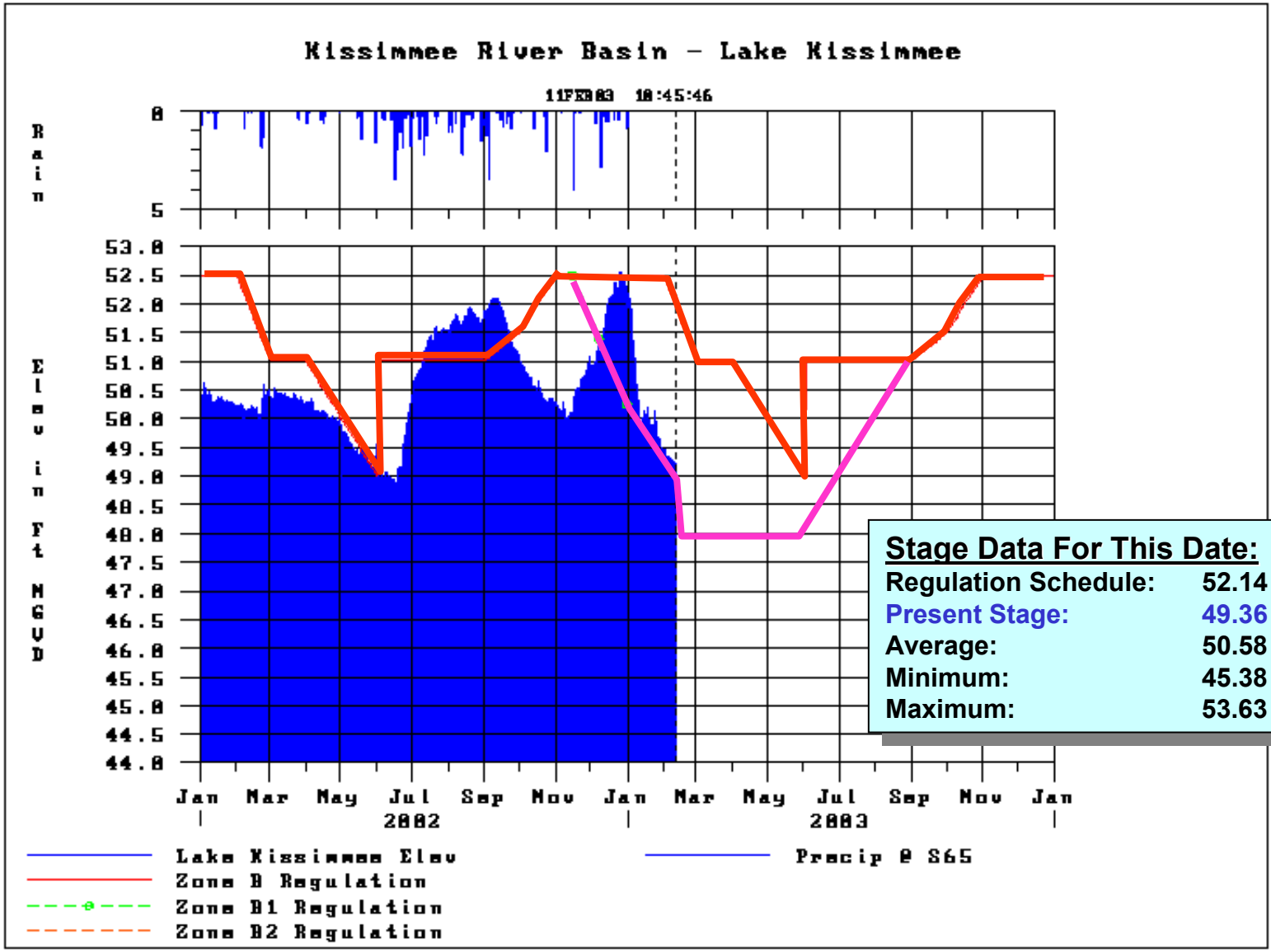
Hydrologic Conditions
Upper Kissimmee Basins

- All lakes are below their regulation schedules
  - Transitioning from **maximum** flood discharges
  - Preparing to make **minimum** environmental releases to Kissimmee River
- Lake Toho Drawdown postponed
  - Concerns regarding high stages in Lake Okeechobee and related impacts to estuaries

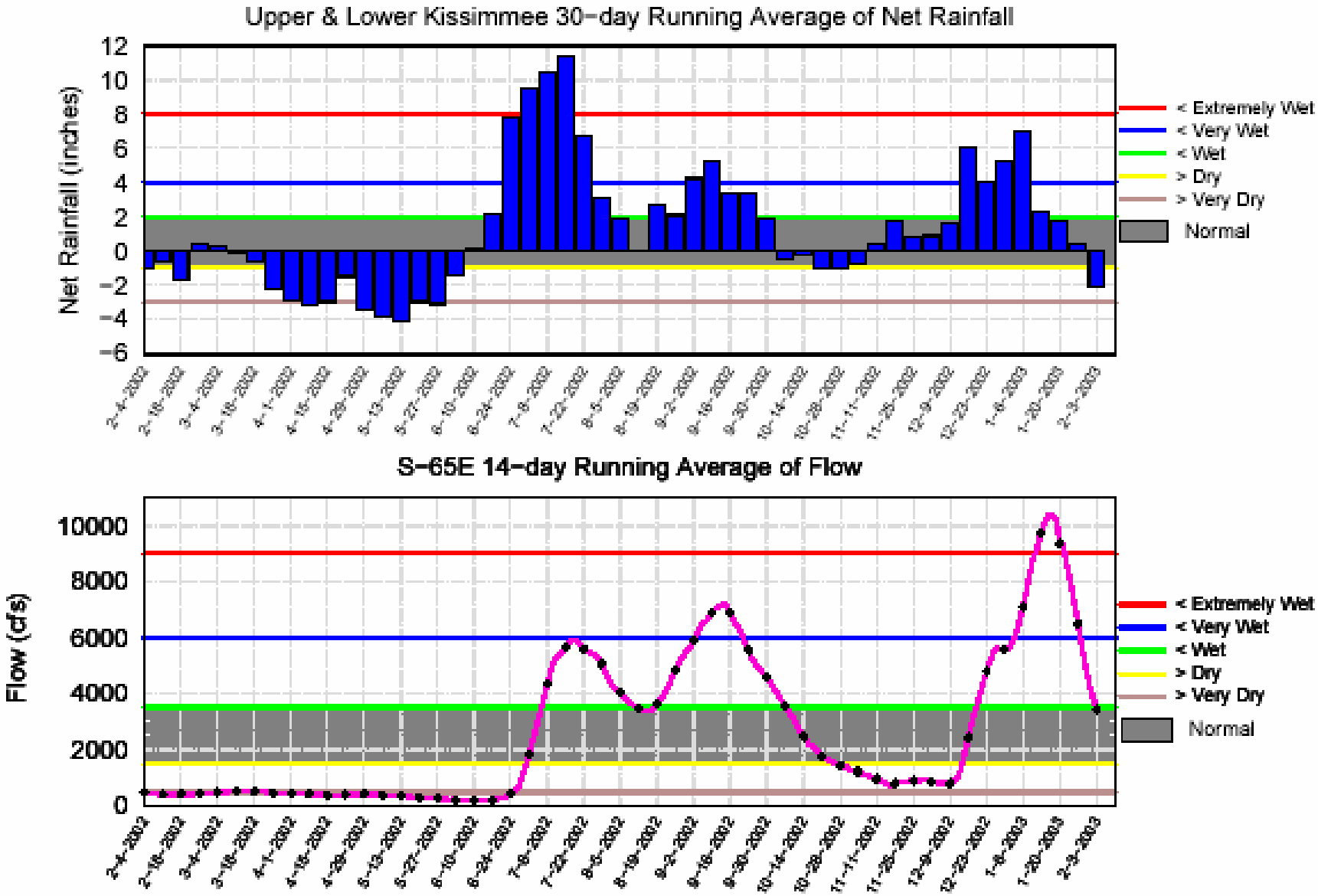



Kissimmee River Basin - Lake Tohopekaliga
11FEB03 10:38:45
Rain
Elev in Ft NGVD
0
5
56
55
54
53
52
51
50
49
48
47
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2002
2003
Stage Data For This Date:
Regulation Schedule: 55.00
Present Stage: 53.80
Average: 53.75
Minimum: 49.61 (1987)
Maximum: 56.53 (1948)
Lake Tohopekaliga
Alternate Regulation
Zone B Regulation
Zone B1 Regulation
Zone B1 (1996-1998)
Zone B2 Regulation
Precip @ S-61


Kissimmee River Basin - East Lake Tohopekaliga
11FEB03 10:45:36
Rain
Elev in Ft NGVD
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2002
2003
East Lake Tohopekaliga Elev
Precip @ Kissimmee Field Statio
Alternate Regulation
Zone B Regulation
Zone B1 Regulation
Stage Data For This Date:
Regulation Schedule: 58.00
Present Stage: 57.75
Average: 56.45
Minimum: 52.82 (1962)
Maximum: 58.60 (1948)

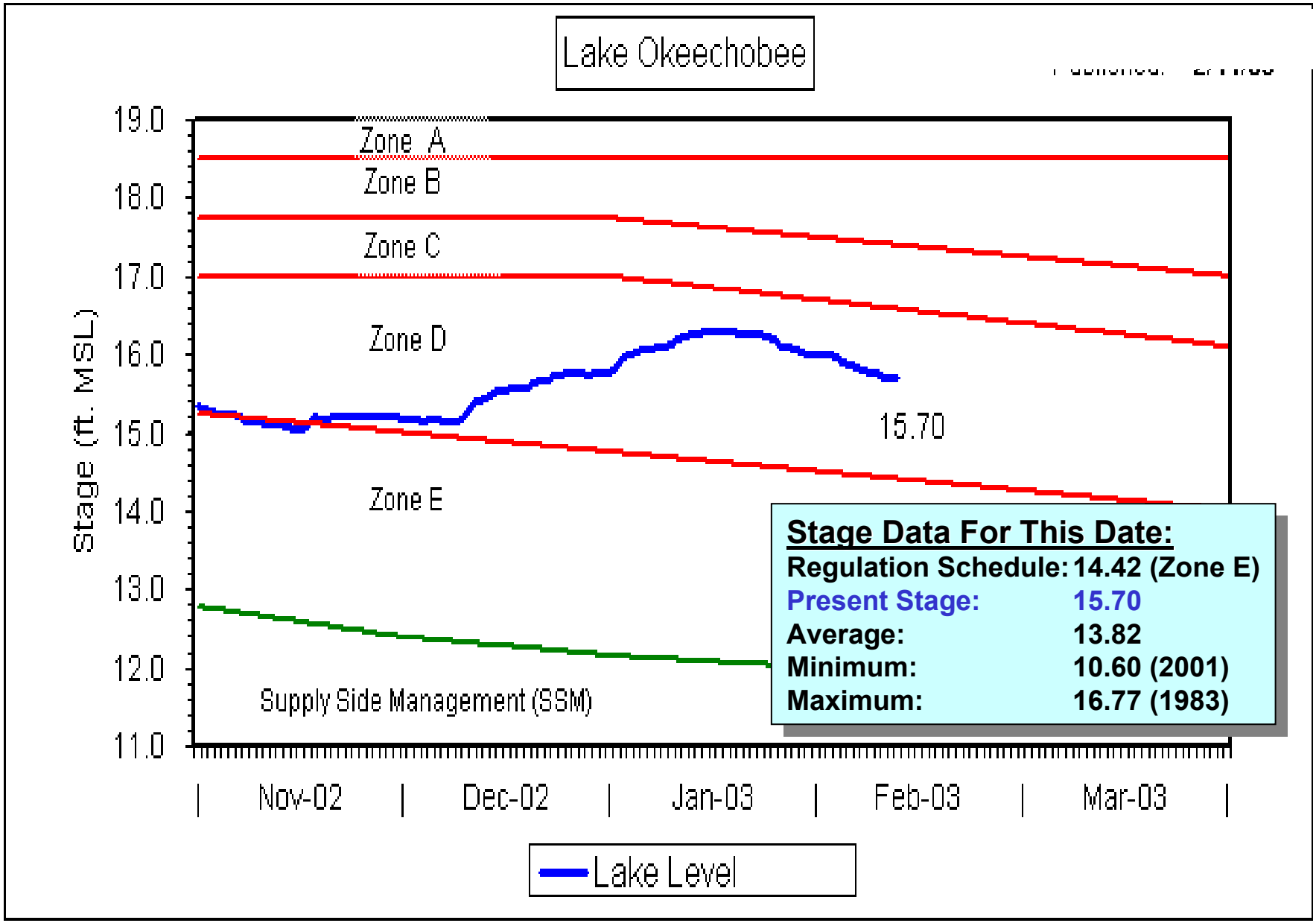

Kissimmee River Basin - Lake Kissimmee
11FEB03 10:45:46
Rain
Elev in Ft NGVD
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2002
2003
Lake Kissimmee Elev
Zone B Regulation
Zone B1 Regulation
Zone B2 Regulation
Precip @ S65
Stage Data For This Date:
Regulation Schedule: 52.14
Present Stage: 49.36
Average: 50.58
Minimum: 45.38 (1996)
Maximum: 53.63 (1948)

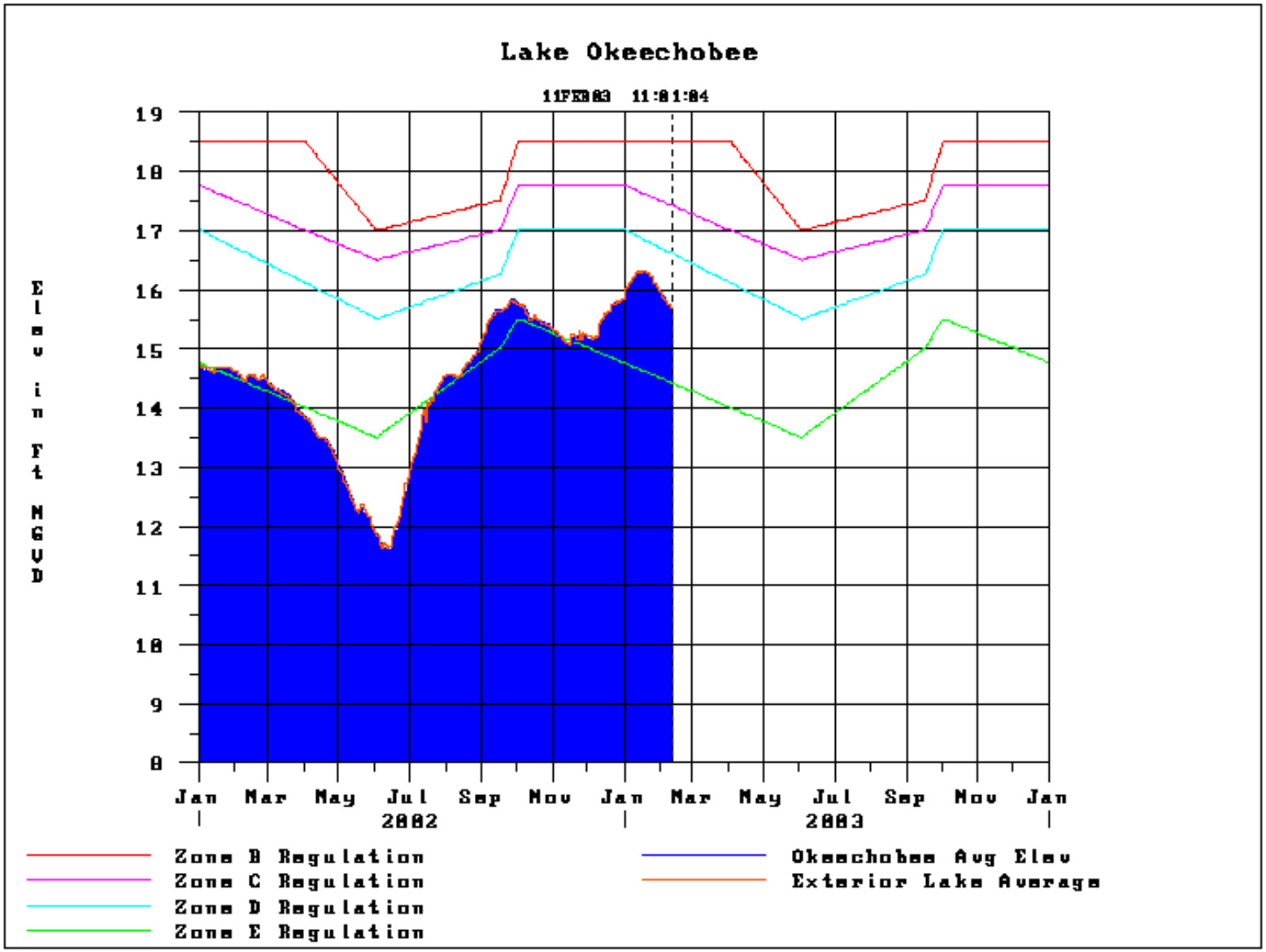
Tributary Basin Condition Indicators as of February 3, 2003



Hydrologic Conditions
Lake Okeechobee

- Lake Okeechobee stages have fallen over the past month in response to a dramatic reduction in inflows and continued regulatory releases
- Ecological reports indicate low light penetration and losses in submerged aquatic vegetation in the northern regions of the lake littoral zone
  - Southern regions remain in good condition

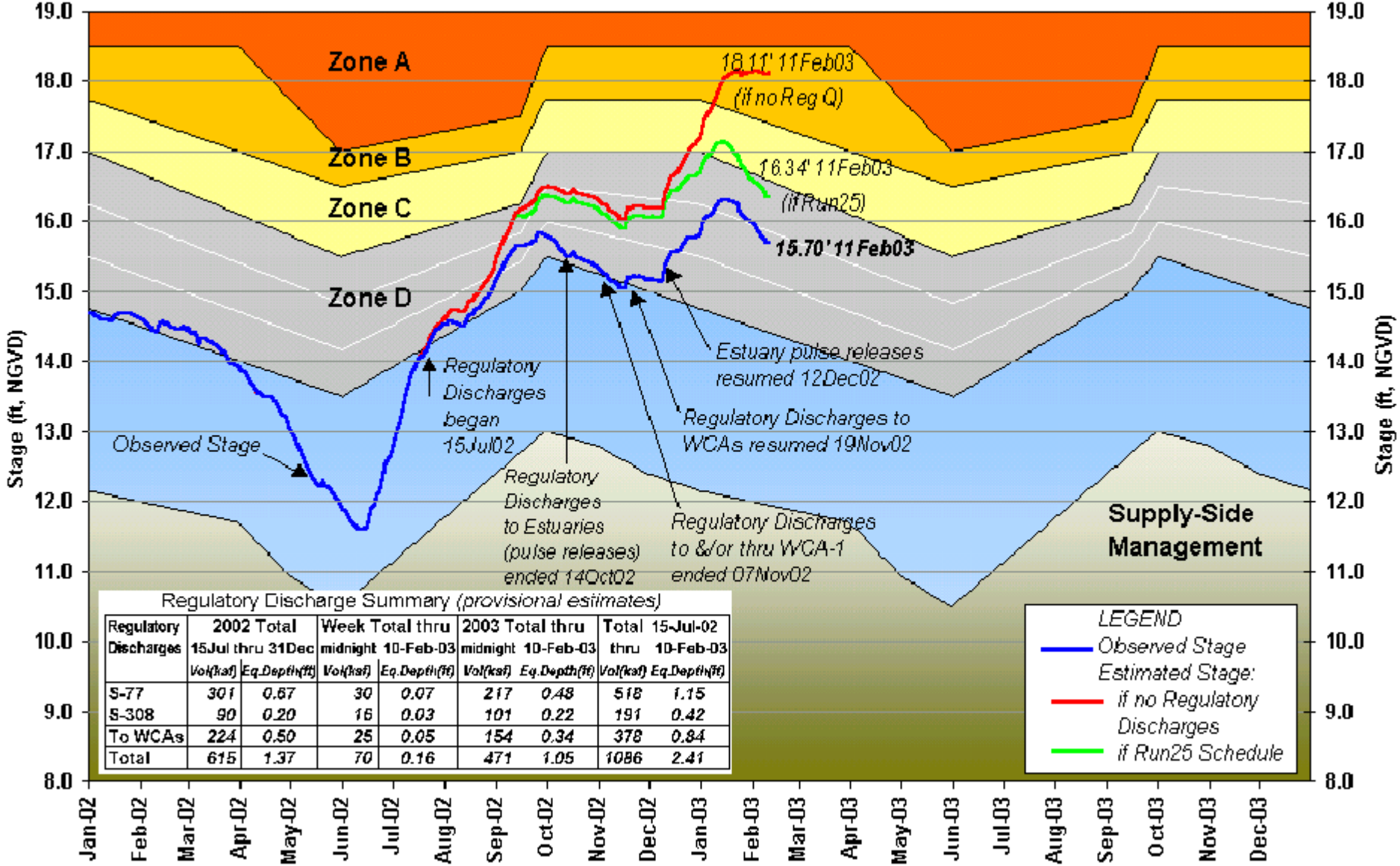

Lake Okeechobee
Stage (ft. MSL)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
Zone A
Zone B
Zone C
Zone D
Zone E
15.70
Supply Side Management (SSM)
Stage Data For This Date:
Regulation Schedule: 14.42 (Zone E)
Present Stage: 15.70
Average: 13.82
Minimum: 10.60 (2001)
Maximum: 16.77 (1983)
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Lake Level


Lake Okeechobee
11FEB03 11:01:04
Elev in Ft NGVD
19
18
17
16
15
14
13
12
11
10
9
8
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2002
2003
Zone B Regulation
Zone C Regulation
Zone D Regulation
Zone E Regulation
Okeechobee Avg Elev
Exterior Lake Average

Lake Okeechobee Current Operations

- **Regulation Schedule**
  - **Stage presently in Zone D**
  - Normal inflows
  - Below normal rainfall
  - Normal seasonal forecast
  - Wet multi-seasonal forecast
- Required regulatory discharge to the WCAs
- Transition to terminate estuary discharges (Level I)
  - 13th pulse releases since mid-July

Lake Okeechobee Stage Comparison

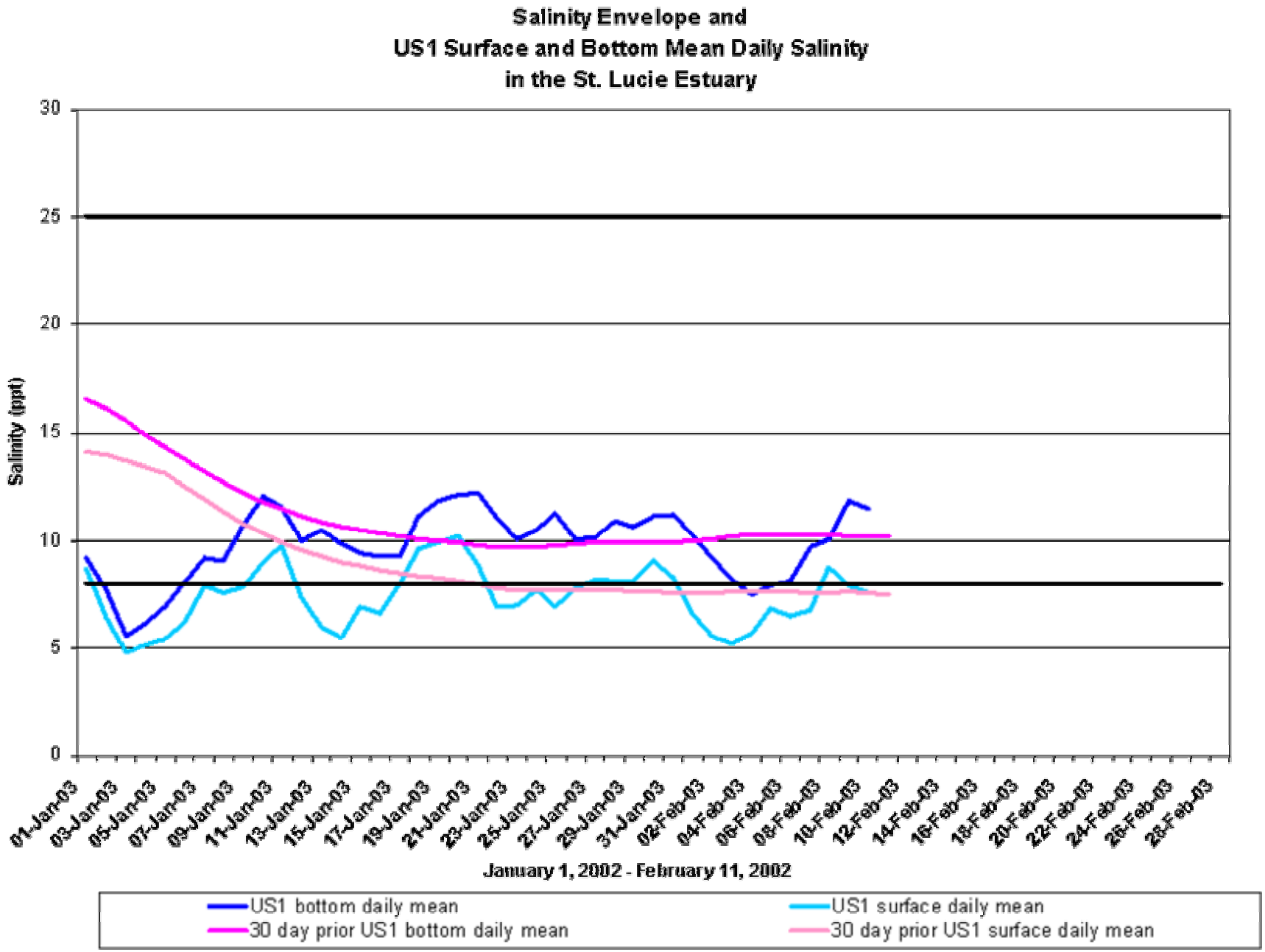


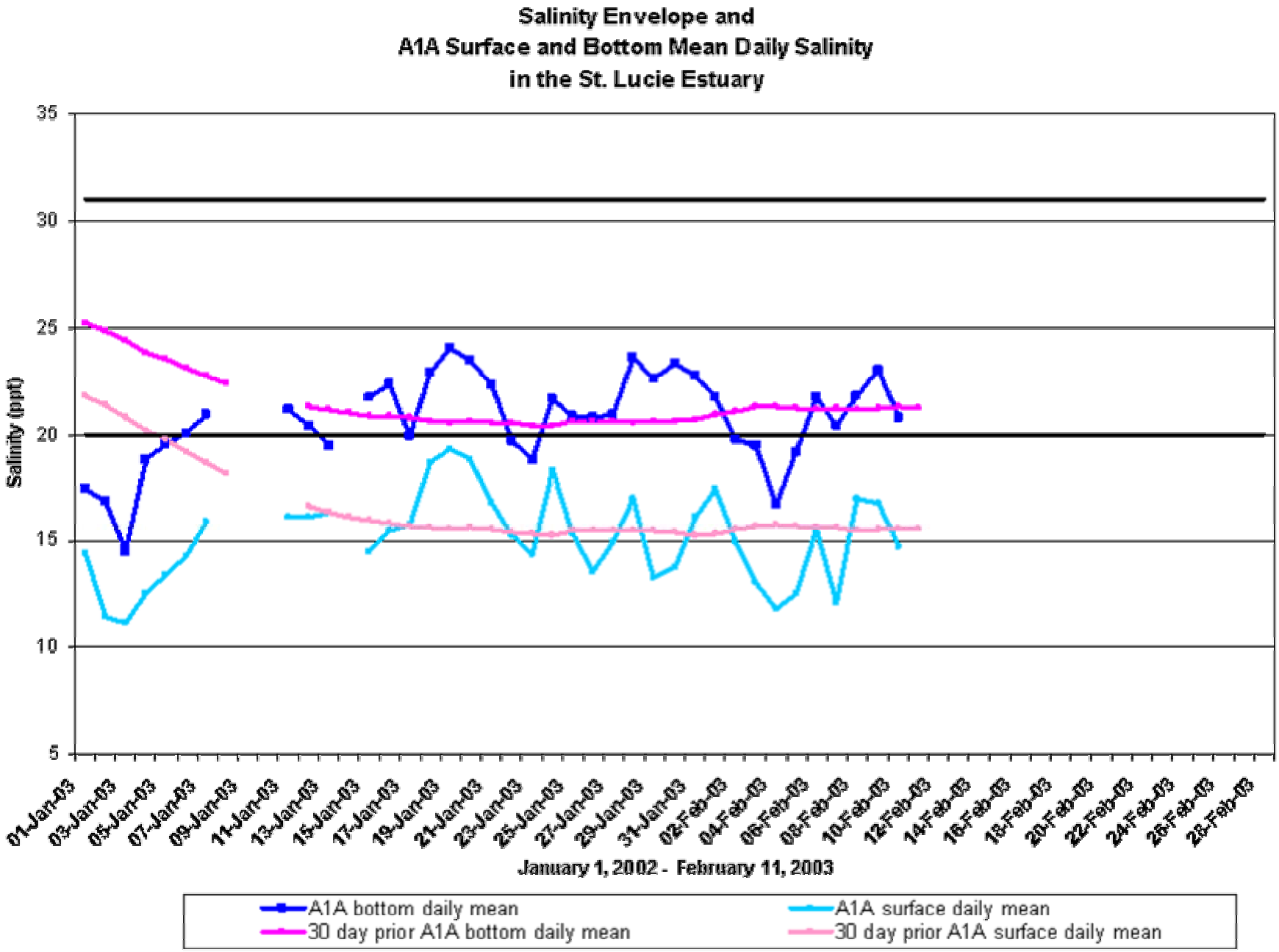
Regulatory Discharge Summary *(provisional estimates)*

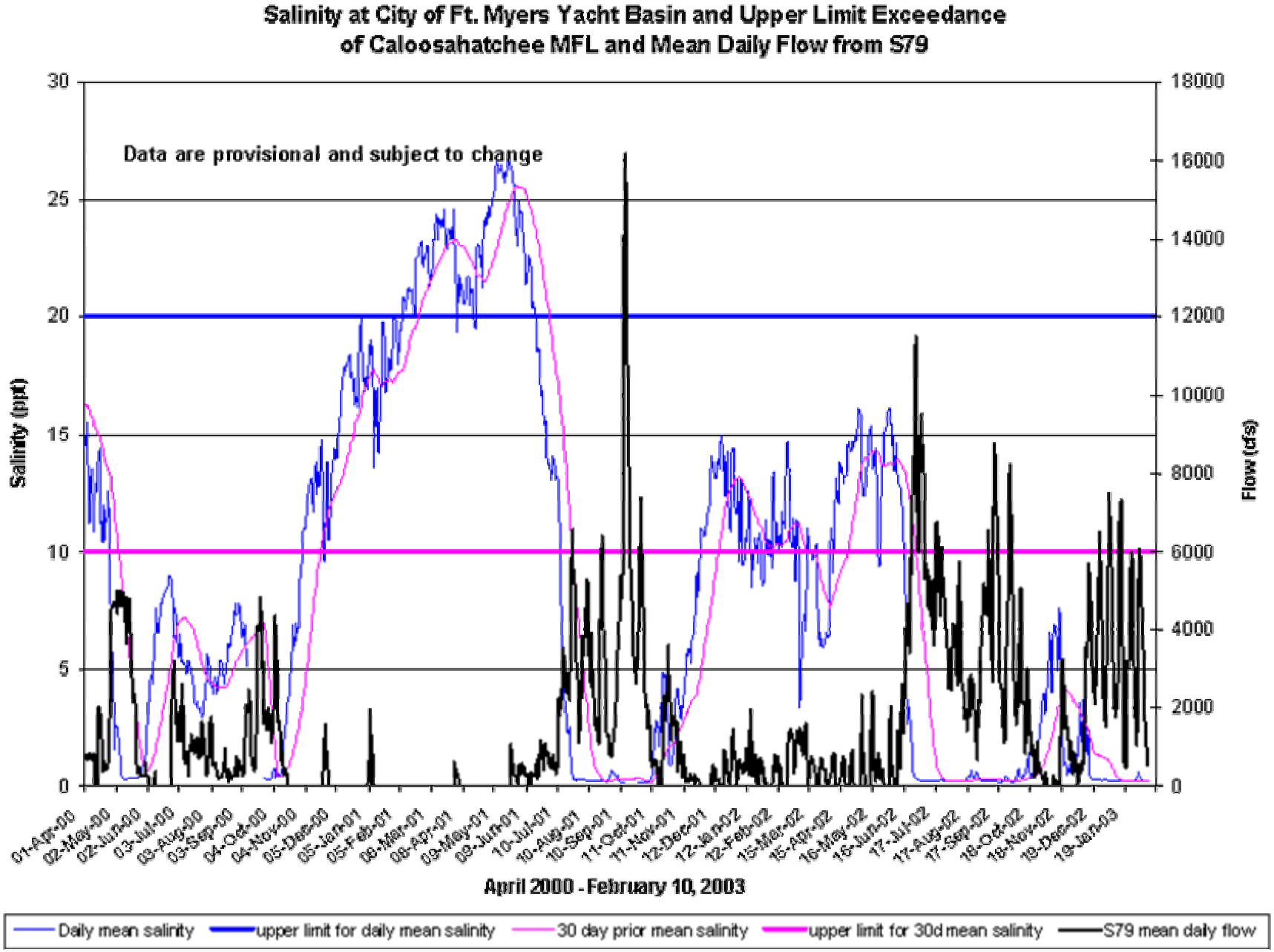
Regulatory Discharges	2002 Total 15Jul thru 31Dec		Week Total thru midnight 10-Feb-03		2003 Total thru midnight 10-Feb-03		Total 15-Jul-02 thru 10-Feb-03	
	Vol(kaf)	Eq.Depth(ft)	Vol(kaf)	Eq.Depth(ft)	Vol(kaf)	Eq.Depth(ft)	Vol(kaf)	Eq.Depth(ft)
S-77	301	0.67	30	0.07	217	0.48	518	1.15
S-308	90	0.20	16	0.03	101	0.22	191	0.42
To WCAs	224	0.50	25	0.05	154	0.34	378	0.84
Total	615	1.37	70	0.16	471	1.05	1086	2.41

Hydrologic Conditions - Estuaries

- **St. Lucie**
  - Salinity values at the Roosevelt Bridge are on the lower end of the preferred range
  - Salinity values at A-1-A Bridge…
    - Surface: Below the preferred range
    - Bottom: Within the preferred range
- **Caloosahatchee**
  - Salinity values in the upper estuary are within the preferred range for freshwater submerged plants
  - Salinity values in the mid to lower estuary are below the preferred range
- No evidence of mortality in either estuary

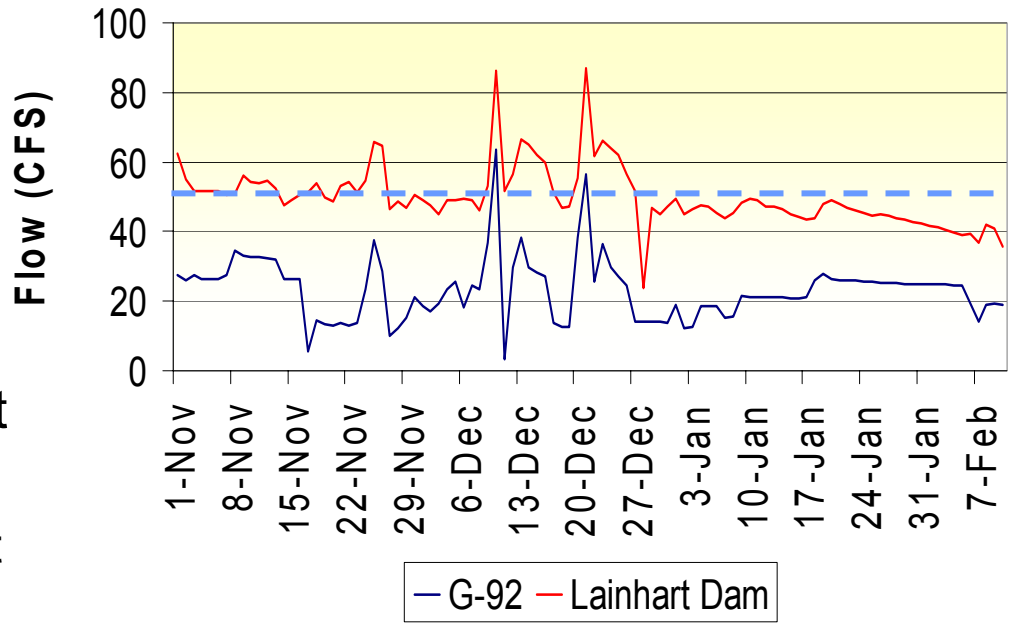

Salinity Envelope and
US1 Surface and Bottom Mean Daily Salinity
in the St. Lucie Estuary
Salinity (ppt)
30
25
20
15
10
5
0
01-Jan-03
03-Jan-03
05-Jan-03
07-Jan-03
09-Jan-03
11-Jan-03
13-Jan-03
15-Jan-03
17-Jan-03
19-Jan-03
21-Jan-03
23-Jan-03
25-Jan-03
27-Jan-03
29-Jan-03
31-Jan-03
02-Feb-03
04-Feb-03
06-Feb-03
08-Feb-03
10-Feb-03
12-Feb-03
14-Feb-03
16-Feb-03
18-Feb-03
20-Feb-03
22-Feb-03
24-Feb-03
26-Feb-03
28-Feb-03
January 1, 2002 - February 11, 2002
US1 bottom daily mean
US1 surface daily mean
30 day prior US1 bottom daily mean
30 day prior US1 surface daily mean


Salinity Envelope and
A1A Surface and Bottom Mean Daily Salinity
in the St. Lucie Estuary
Salinity (ppt)
35
30
25
20
15
10
5
01-Jan-03
03-Jan-03
05-Jan-03
07-Jan-03
09-Jan-03
11-Jan-03
13-Jan-03
15-Jan-03
17-Jan-03
19-Jan-03
21-Jan-03
23-Jan-03
25-Jan-03
27-Jan-03
29-Jan-03
31-Jan-03
02-Feb-03
04-Feb-03
06-Feb-03
08-Feb-03
10-Feb-03
12-Feb-03
14-Feb-03
16-Feb-03
18-Feb-03
20-Feb-03
22-Feb-03
24-Feb-03
26-Feb-03
28-Feb-03
January 1, 2002 - February 11, 2003
A1A bottom daily mean
A1A surface daily mean
30 day prior A1A bottom daily mean
30 day prior A1A surface daily mean


Salinity at City of Ft. Myers Yacht Basin and Upper Limit Exceedance
of Caloosahatchee MFL and Mean Daily Flow from S79
Data are provisional and subject to change
Salinity (ppt)
Flow (cfs)
30
25
20
15
10
5
0
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
01-Apr-00
02-May-00
02-Jun-00
03-Jul-00
03-Aug-00
03-Sep-00
04-Oct-00
04-Nov-00
05-Dec-00
05-Jan-01
05-Feb-01
06-Mar-01
06-Apr-01
09-May-01
09-Jun-01
10-Jul-01
10-Aug-01
10-Sep-01
11-Oct-01
11-Nov-01
12-Dec-01
12-Jan-02
12-Feb-02
15-Mar-02
15-Apr-02
16-May-02
16-Jun-02
17-Jul-02
17-Aug-02
17-Sep-02
18-Oct-02
18-Nov-02
19-Dec-02
19-Jan-03
April 2000 - February 10, 2003
Daily mean salinity
upper limit for daily mean salinity
30 day prior mean salinity
upper limit for 30d mean salinity
S79 mean daily flow

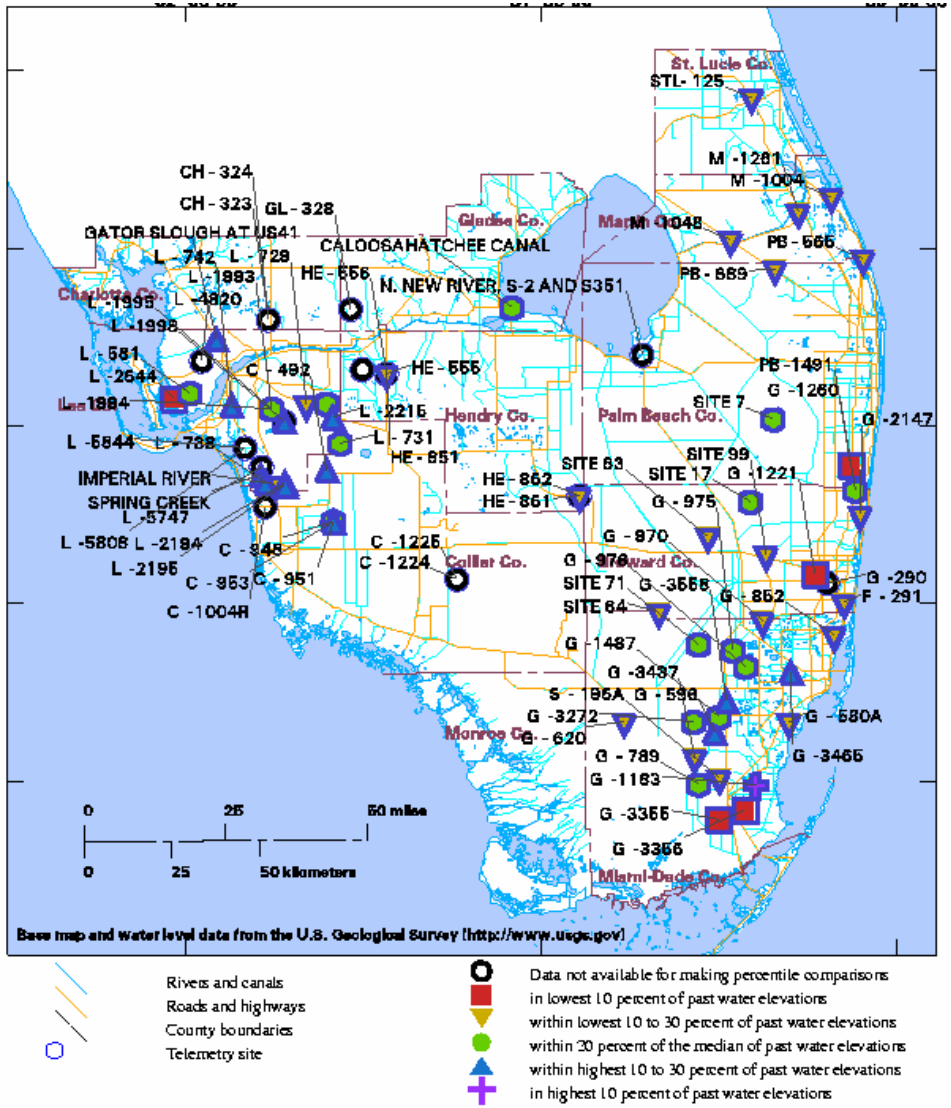
Loxahatchee River

- Flows across Lainhart Dam have fallen below the operational limit of 50 cfs
  - Low levels in C-18 provide insufficient water quantity to maintain desired minimum flows at this time
    - C-18 stages about 2.5 ft below normal
    - If C-18 stages fall another 0.5 ft., releases thru G-92 will be terminated

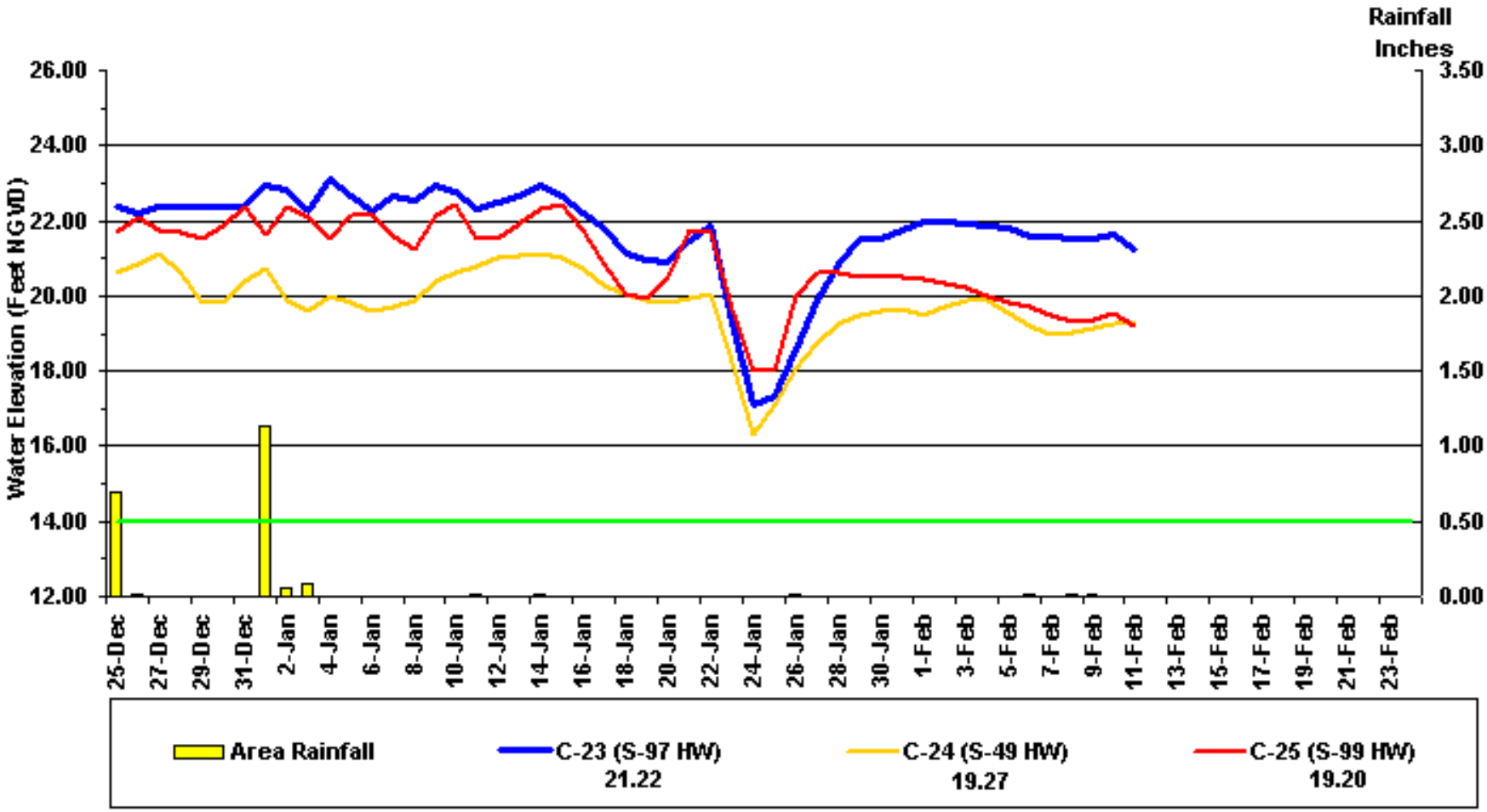


Groundwater Conditions

- Upper East Coast
  - Below normal seasonal levels
- Lower East Coast
  - Below normal seasonal levels
- Lower West Coast Region:
  - Normal to above normal seasonal levels

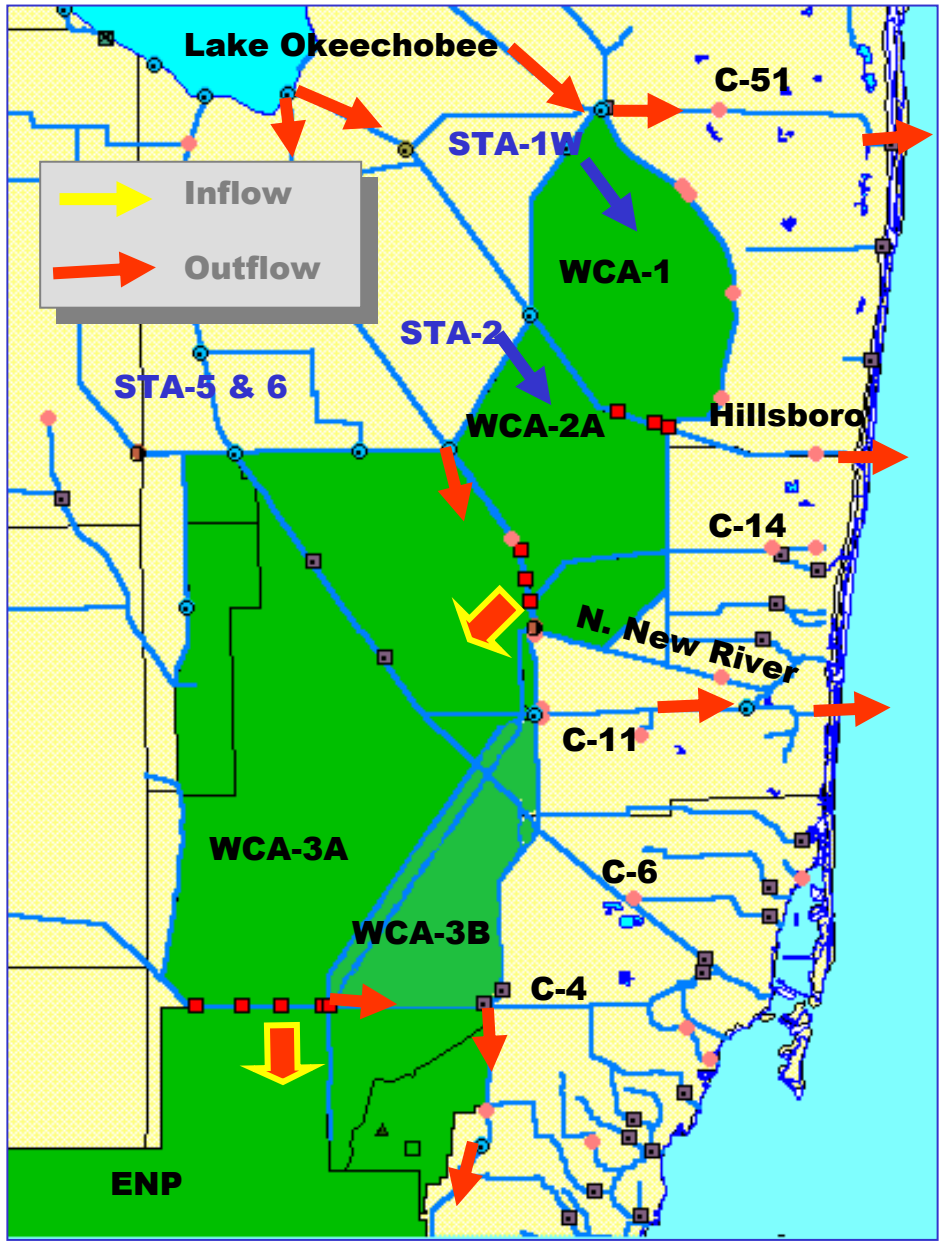


St. Lucie Canal Stages



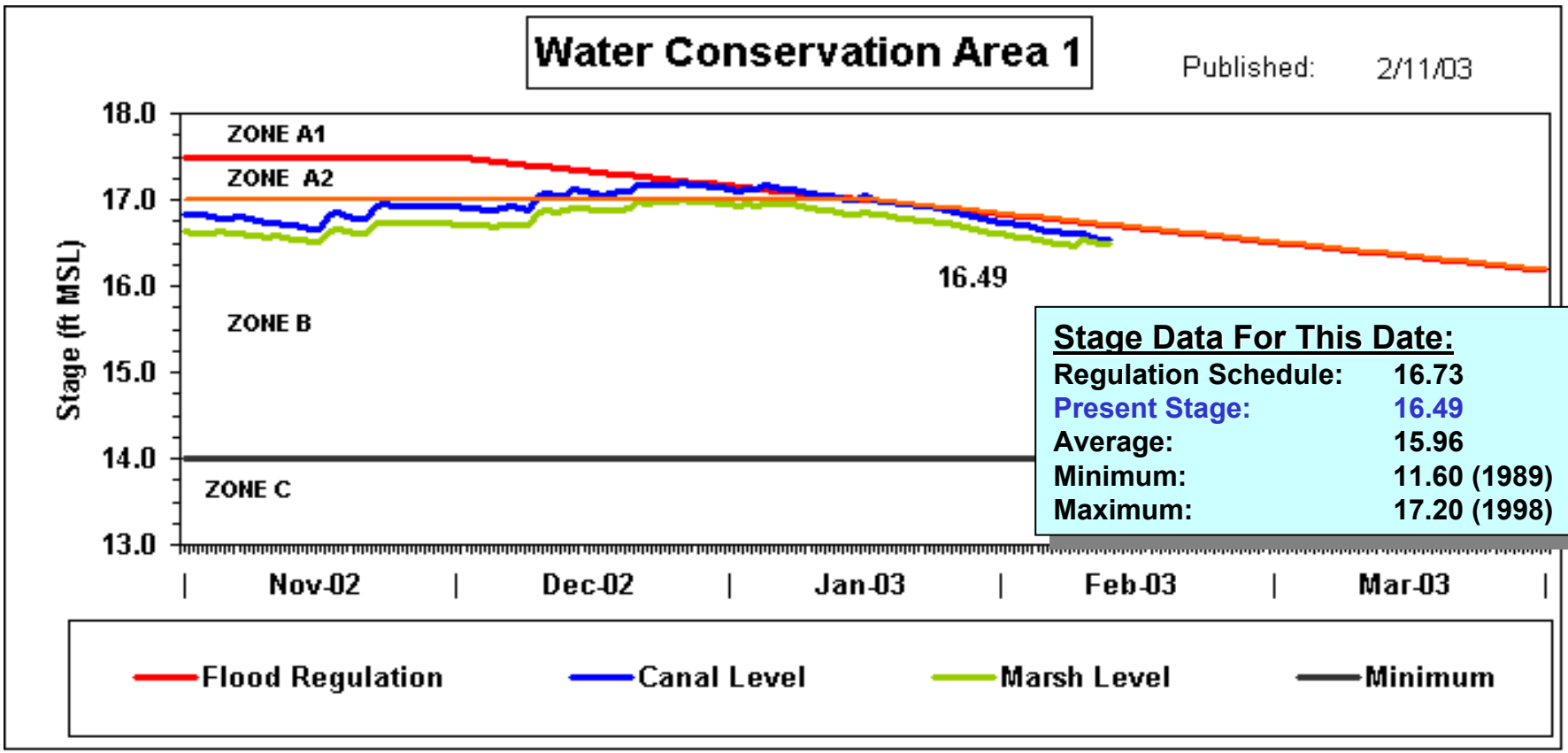
Water Conservation Areas

- WCA-1 stages below schedule
- WCA-2A stages are slightly below regulation schedule
- WCA-3A stages are Zone E1 regulation schedule
  - Minimum deliveries under the “Rainfall Plan”
- Regulatory releases from Lake Okeechobee are…
  - being treated by STA-1W & STA-2 and released to WCAs 1 & 2A respectively



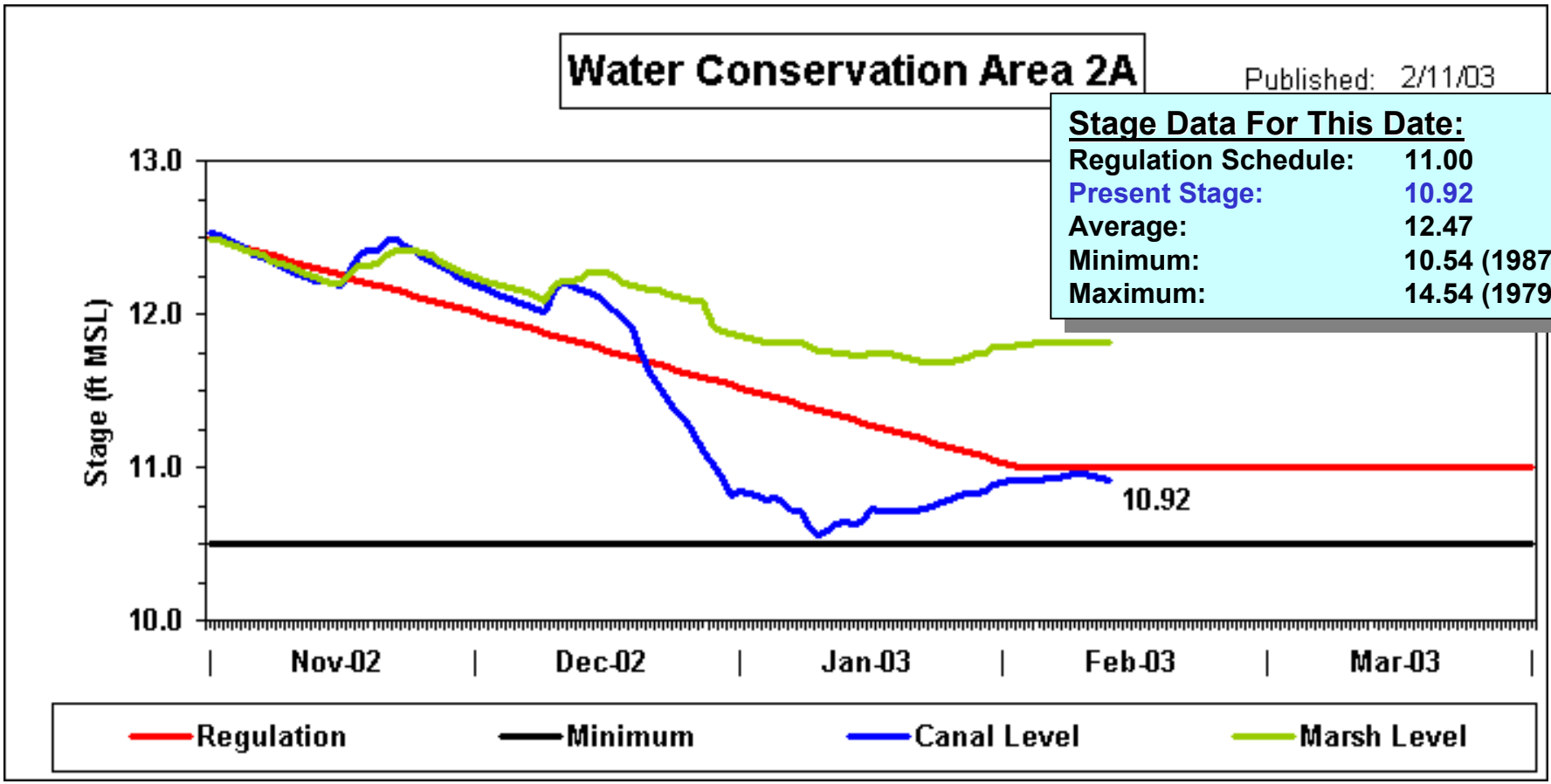
Hydrologic Conditions
Water Conservation Area No. 1

- Stages remain below regulatory schedule
  - Allows regulatory releases from Lake Okeechobee



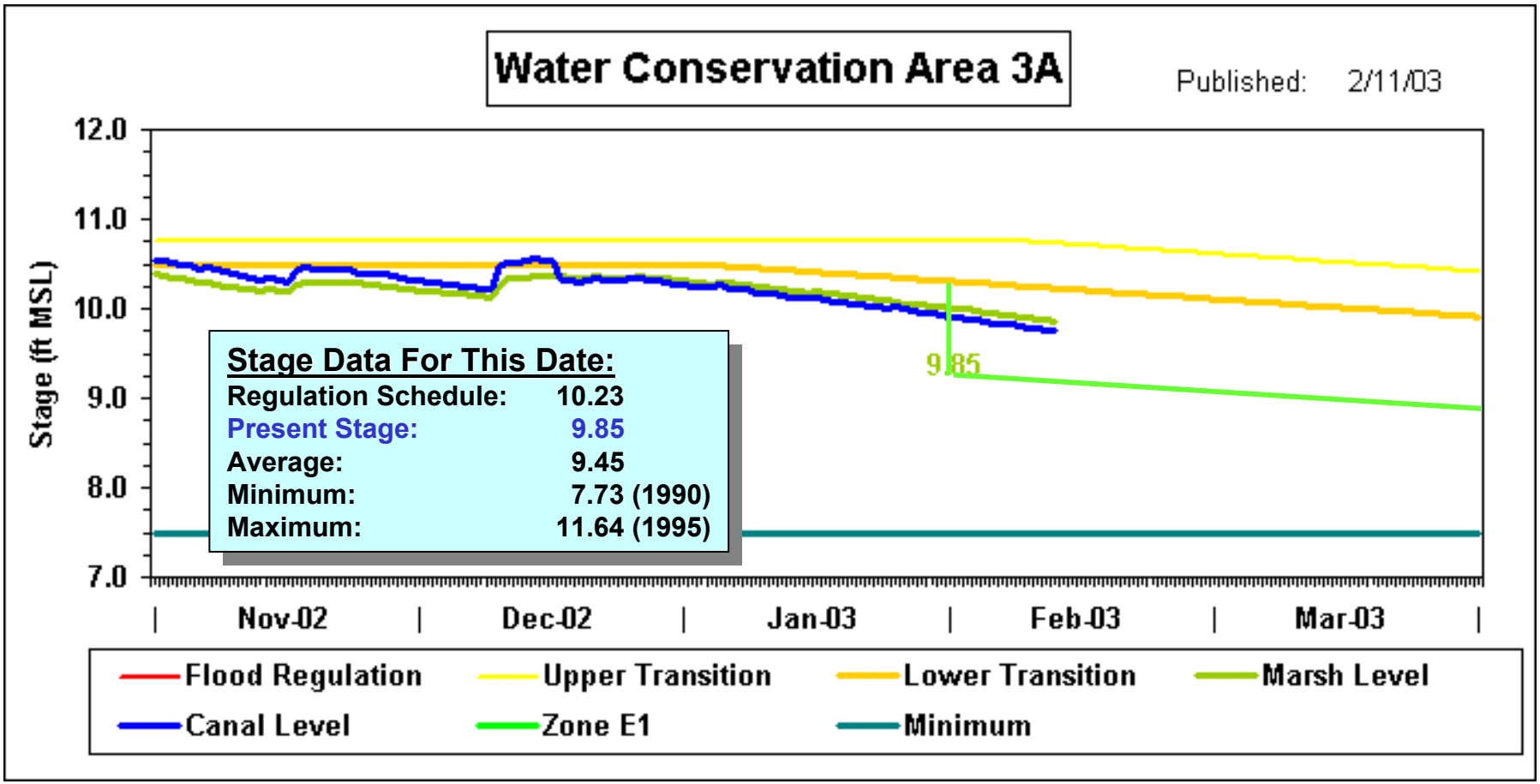
Hydrologic Conditions
Water Conservation Area No. 2A

- Below regulation schedule since late December



Hydrologic Conditions
Water Conservation Areas

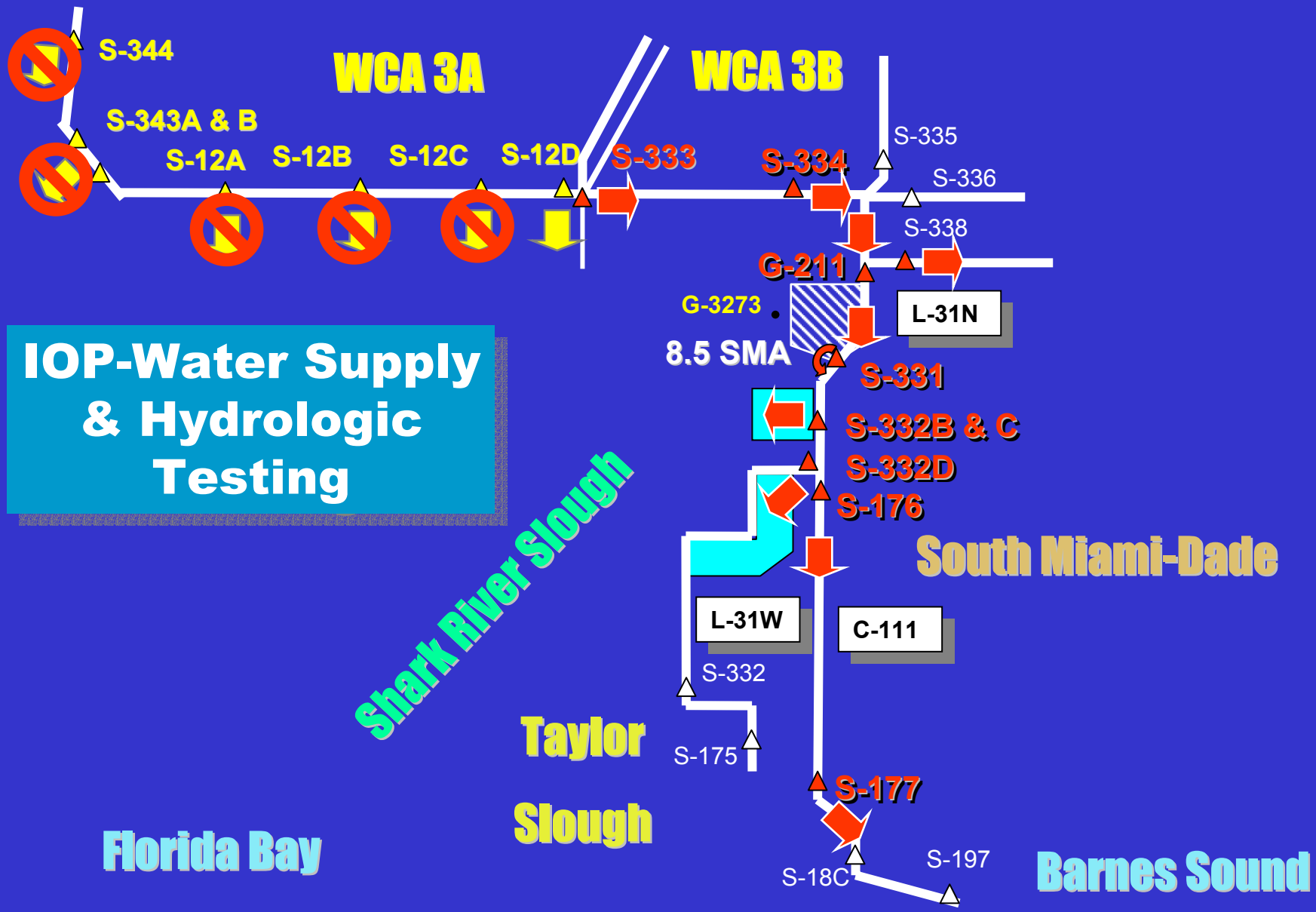
- Stages moved in Zone E1 under IOP



Hydrologic Conditions
SDCS Current Operations

- Operations over the passed several months have been oriented to provide water supply deliveries to South Dade.
- Currently completing preliminary testing of the hydrologic response of the IOP impoundments

SDCS - IOP Current Operations



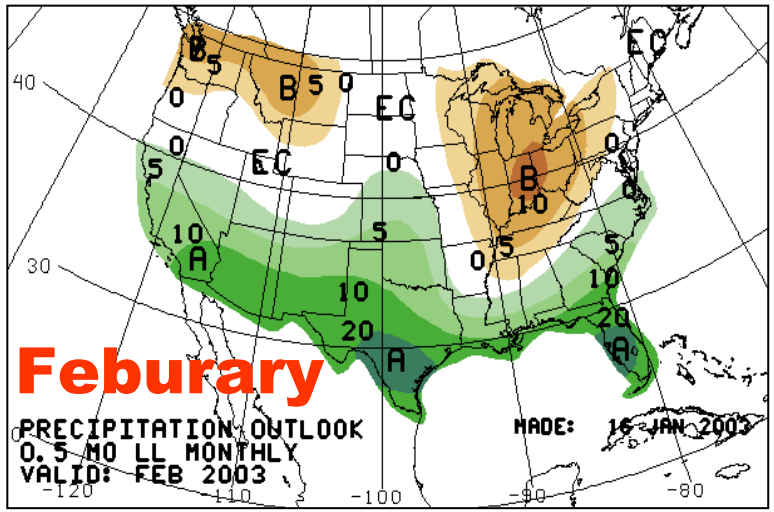
IOP-Water Supply & Hydrologic Testing

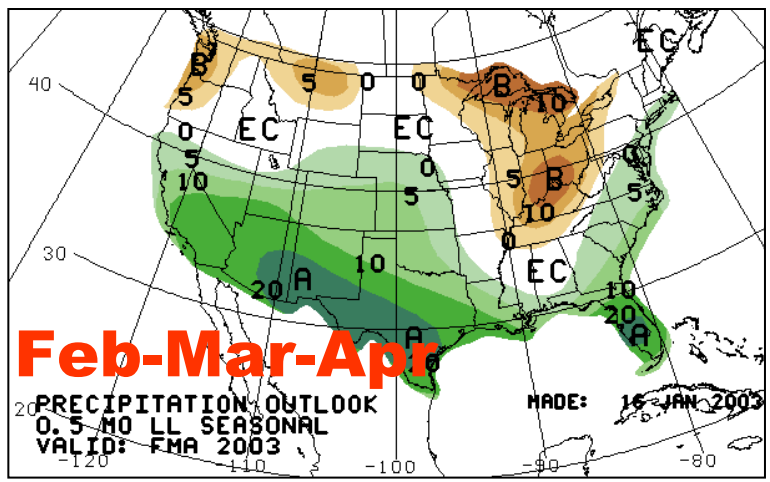
Climate Outlook

Governing Board Workshop
Presentation - February 12, 2003

Seasonal Climatic Outlook

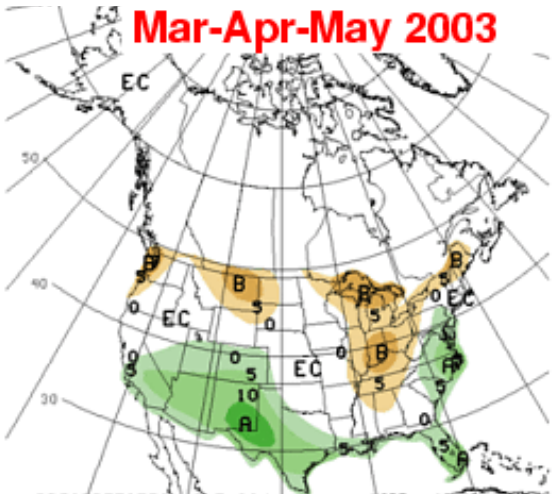
- CPC reports that February thru April 2003 has an increased probability for above average precipitation north of Lake Okeechobee

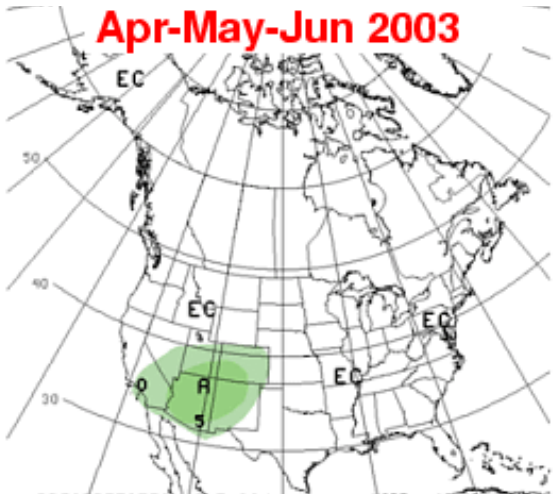


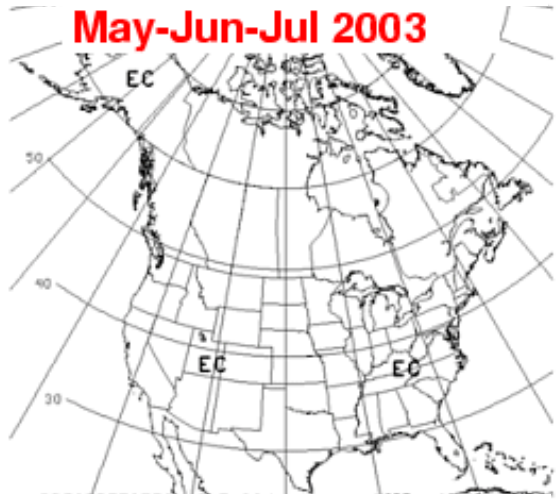


Multi-Seasonal Climatic Outlook

- CPC indicates that there continues to be a higher probability of above average rainfall through March-April





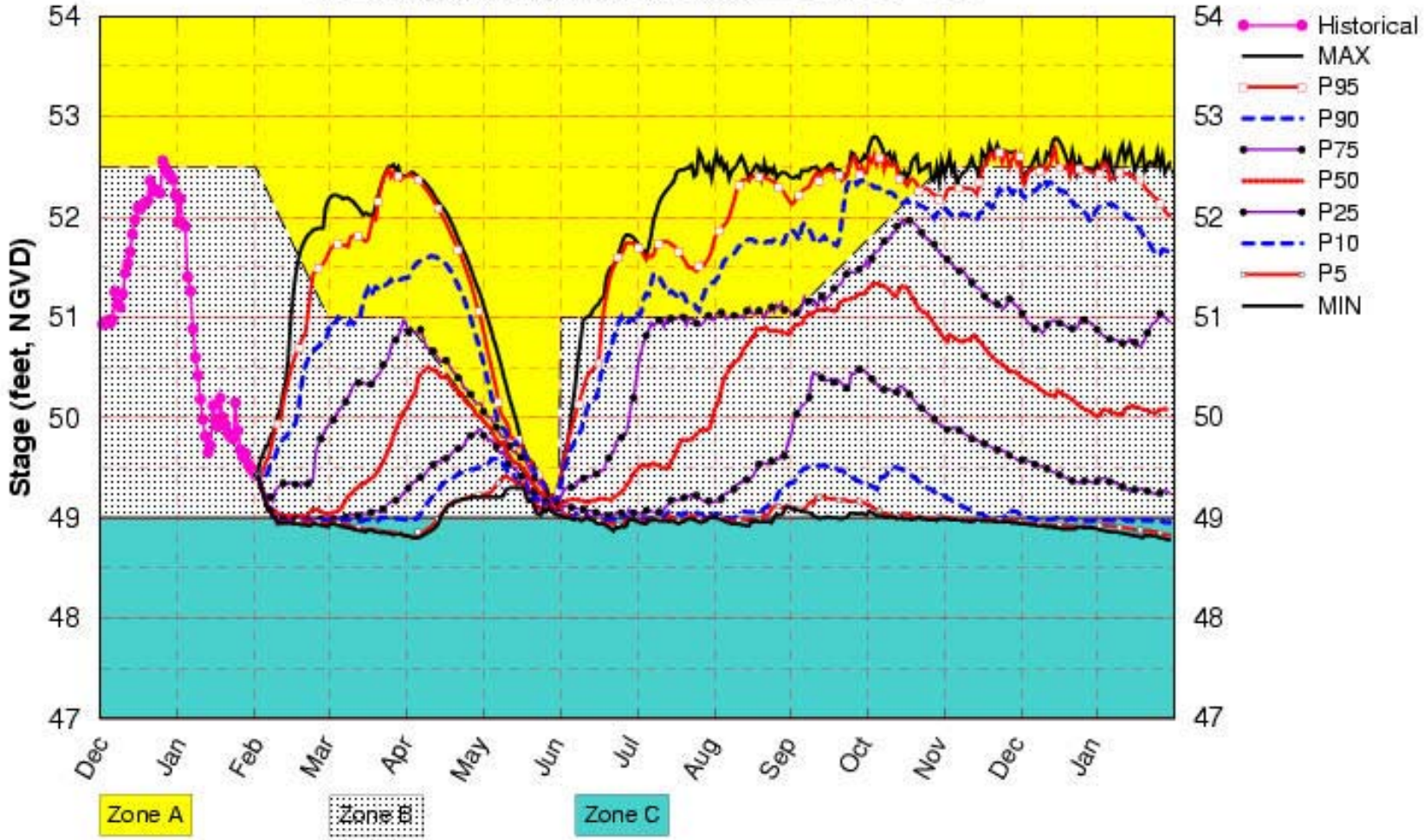


Hydrologic Outlook

Governing Board Workshop
Presentation - February 12, 2003

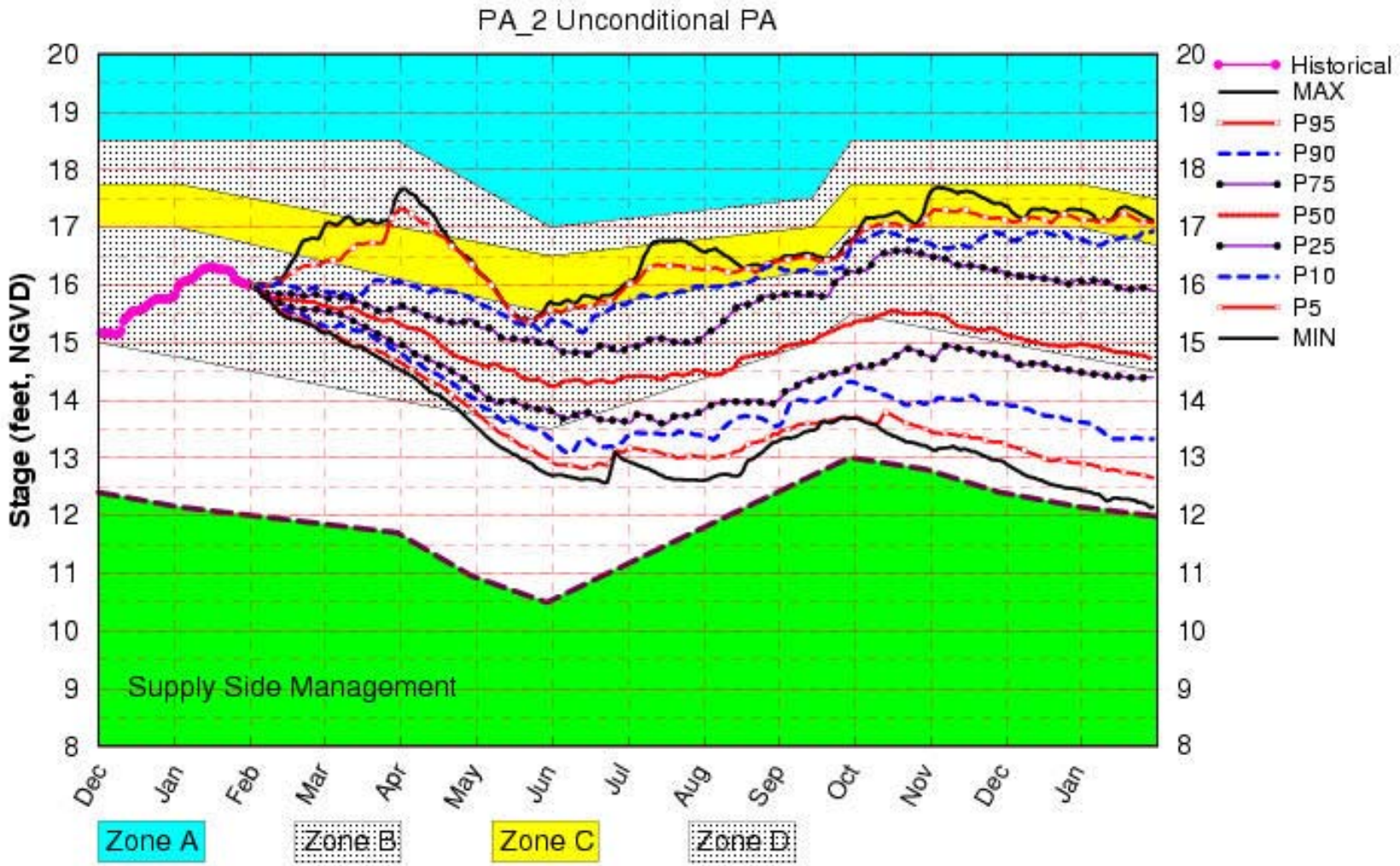
UKISS Feb 2003 Position Analysis

Unconditional PA for Lake Kissimmee Stage at S65



Tue Feb 11 08:27:06 2003

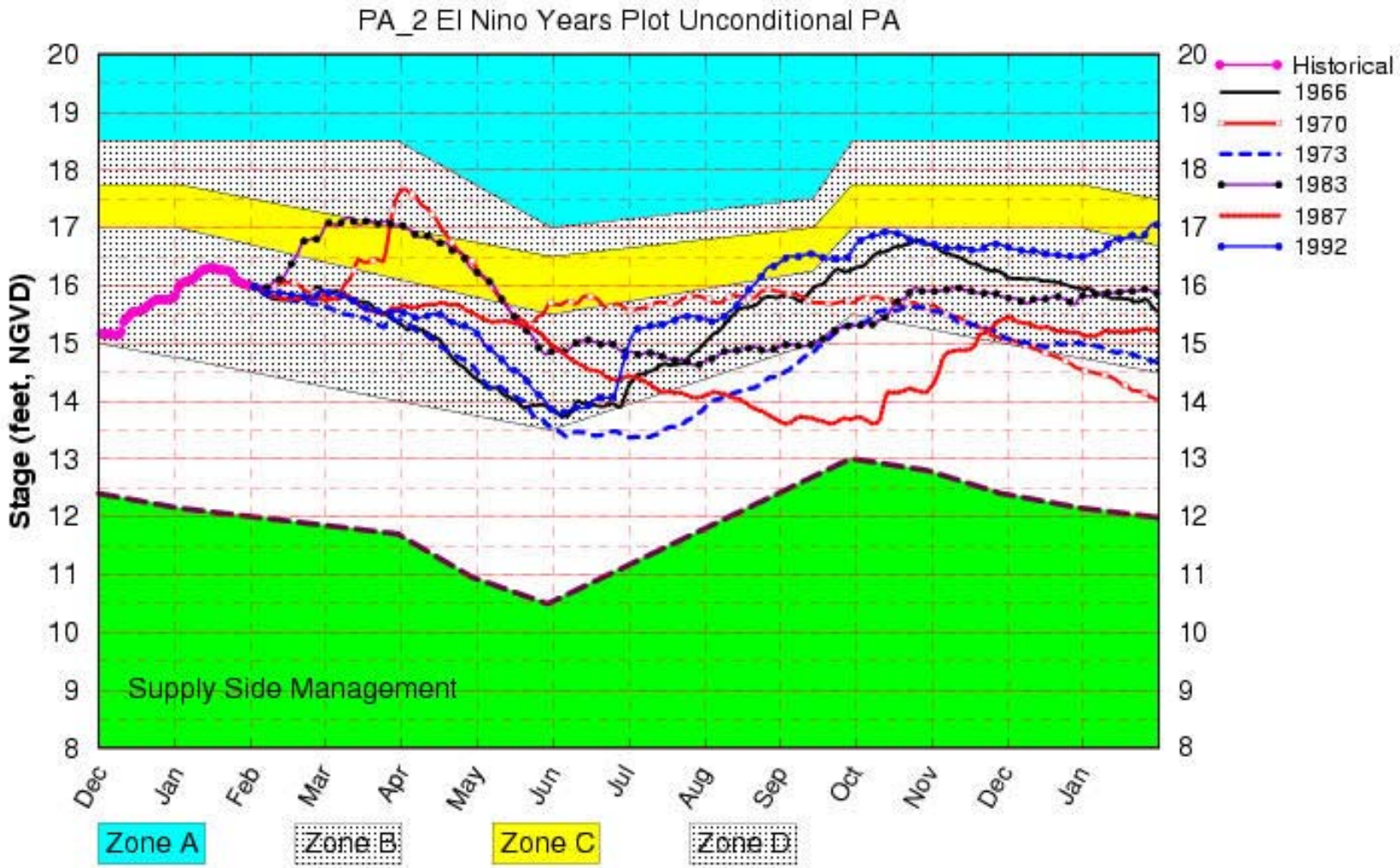
Lake Okeechobee SFWMM Feb 2003 Position Analysis



(See assumptions @ http://www.sfwmd.gov/org/pld/hsm/sfwmm_pa.html)

Mon Feb 10 17:45:01 2003

Lake Okeechobee SFWMM Feb 2003 Position Analysis



(See assumptions @ http://www.sfwmd.gov/org/pld/hsm/sfwmm_pa.html)

Mon Feb 10 17:46:00 2003

Operational Outlook

Governing Board Workshop
Presentation - February 12, 2003

Operational Outlook

- If dry conditions persist, additional water from Lake Okeechobee may be needed to moderate potentially increasing salinity in areas of the Caloosahatchee Estuary that are populated by aquatic (freshwater) vegetation
- If needed, this operation will be performed under the "Adaptive Protocols For Lake Okeechobee Operations"
  - **Avg 300 cfs while stages remain in Zone D**
  - **Reported to the Governing Board monthly**
  - **Termination of releases will occur if Lake Okeechobee stages fall into Zone E**